

No. 183. Vol. XXXIX. Part I.

JANUARY, 1954.

GEOGRAPHY

FORMERLY THE GEOGRAPHICAL TEACHER.



THE QUARTERLY JOURNAL OF THE GEOGRAPHICAL ASSOCIATION

Central Office :
c/o The Park Branch Library,
Duke Street, Sheffield, 2.
(Telephone : 25946.)

LONDON :

PUBLISHED FOR THE GEOGRAPHICAL ASSOCIATION BY THE LONDON GEOGRAPHICAL INSTITUTE
MESSRS. G. PHILIP AND SON, LTD., 32, FLEET STREET, E.C.4. AND PRINTED BY
PERCY BROTHERS, LTD. THE HOTSPUR PRESS, MANCHESTER ; AND AT LONDON.
PUBLISHED FOUR TIMES A YEAR.
PRICE TO NON-MEMBERS, 5s. NET. FREE TO MEMBERS OF THE ASSOCIATION.

CONTENTS

	Page
LOOKING AHEAD AND TAKING STOCK. Alice Garnett	1
THE COMMONWEALTH IN THE GEOGRAPHY SYLLABUS. PRESIDENTIAL ADDRESS. O. J. R. Howarth	5
THE ORANGE FREE STATE GOLDFIELD. Peter Scott	13
BROKEN HILL, NEW SOUTH WALES. Megan C. Allen	21
SIGNIFICANT PLACE-NAMES IN SCHOOL GEOGRAPHY. L. J. Jay	28
CORRESPONDENCE	33
THIS CHANGING WORLD	35
GEOGRAPHICAL ASSOCIATION	47
GEOGRAPHICAL ASSOCIATION—BALANCE SHEET, 1952-53	54
REVIEWS OF BOOKS	58
GEOGRAPHICAL ARTICLES IN MAGAZINES RECEIVED	61

NOTE.—The authors alone are responsible for the opinions expressed in their articles.

THE GEOGRAPHICAL ASSOCIATION

Membership of the Geographical Association is open to all who are interested in geography or in education. Privileges of full membership include the receipt of *Geography* (four issues a year), and the use of the library of books and periodicals (for residents in the British Isles).

Annual subscription (Sept., 1953-Aug., 1954): 12/6.

Facilities exist for student and School or College membership at special rates. Local branches throughout the United Kingdom organise lecture and excursion programmes for members in their vicinities.

Cheques and postal orders in payment of subscription should be crossed and made payable to the **Geographical Association**. They should be sent to the **Assistant Secretary, Geographical Association, c/o The Park Branch Library, Duke Street, Sheffield, 2**. Branch members may pay their full subscriptions through their local branch secretary or treasurer.

All correspondence, including manuscripts or other communications concerning *Geography*, should be sent to the Assistant Secretary. Information for contributors of articles to *Geography* will be supplied on request. **All correspondents requiring a reply should enclose a stamped addressed envelope.**

SPECIAL PUBLICATIONS OF THE GEOGRAPHICAL ASSOCIATION

Local Studies (Revised 1949), 3/-. Geography in the Primary School (1953), 2/-. Geography in the Secondary School (1952), 2/-. The Geography Room in a Secondary School (1954), 2/6. Set of 6 O.S. map extracts of contrasted areas, 4/6.	Some Useful Statistical Sources by K. R. Sealy (Reprint), 10d. Set of geological transparencies to accompany map sets, 2/-. Lincoln. A Geographical Excursion (Lincoln Branch), 1/3. Class and reference books for Form VI, 8d. University entrance requirements and scholarships, 8d.
---	--

Prices quoted are for members and direct order, and include postage.

LOOKING AHEAD AND TAKING STOCK

LAST year we celebrated our Diamond Jubilee and marked the occasion by a special issue of *Geography* in which three of the most senior members of our Association paid a tribute to our founder members, considered the development of our Association since its foundation and briefly surveyed the present status of our subject in schools and training colleges. Nothing, we feel could have been more fitting to the occasion. It is equally fitting, however, that, having thus looked back, we should take stock of our needs and look forward, as we work with renewed incentive towards our first centenary, now only forty years ahead. There is still much for the Association to do for teachers of our subject, but progress and expansion are closely geared to financial resources, and these, especially since the war, have been such as to give members of the executive committee some cause for anxiety.

Superficially, it might appear from our Balance Sheets that all is well, for we have paid our way. This, however, has been achieved only by dint of finding each year a very large sum of money in addition to our basic income from members' subscriptions. At any time subscriptions meet only a part of our needs. In 1948 the income from subscriptions was £1,614, against an expenditure of £2,455, leaving a gap of £841 to be bridged. In 1953 the same figures were respectively £1,706 and £3,160, leaving no less than £1,454 to be found from other sources, most of which are of a somewhat precarious and uncertain nature.

The difference was in fact found as our Balance Sheet shows, but this does not mean that the financial needs of the Association have been properly met. We need additional funds to put the salaries and wages paid to our staff at headquarters on a proper basis. Hitherto our Assistant Secretary and our clerks have been underpaid by comparison with current standard rates of remuneration for clerical and other services and we have made no provision for pension schemes. We feel that this is a matter that should be remedied without further delay, for surely it should be our pride that we are good employers. We are most anxious also to increase the size and illustration of our journal, as many members have asked, but printing costs are already very heavy. We need, equally, to help our invaluable Section committees more effectively in the essential work which they attempt to do. At present they are severely handicapped through lack of funds; many of the members attending committee meetings must pay their own travelling expenses, and clerical and postage expenses are met with difficulty. Lastly there is urgent need for us to build up the

General Reserve Fund started two years ago, against the day when we may not receive the generous hospitality which at present it is our good fortune to enjoy. It can, for instance, be stated that, were we not offered the hospitality of premises for our Annual Conference, the provision of equivalent accommodation and facilities elsewhere in London would probably cost us more than £100 every year. And let us not forget that we are at present very deeply indebted to the City of Sheffield for our library and office accommodation at headquarters throughout the year. Were we called upon to pay for all these potential liabilities it is clear that our annual expenditure would exceed £4,000, while our present income from subscriptions is considerably less than half this amount. No doubt it has been the realisation of something of this kind that has prompted many of our members from time to time in recent years to ask the Honorary Secretary why we have not raised our subscription which is, as they have pointed out, very much lower than that of most kindred associations.

It was with all of these facts in mind that the executive committee recently appointed a finance sub-committee to review the whole position, and to make recommendations to Council. Acting on these, I circulated a letter to all members early in December, giving notification of a proposal to be put to Council and to the Annual General Meeting that the subscription should be raised to £1 as soon as possible. It is my clear duty therefore to report back to members what has happened in regard to this situation.

My sincere thanks must first be expressed to the writers of the numerous replies promptly sent. More than 320 of these expressed approval for the proposed increase in the subscription, and five of these were written as an expression of the considered opinions of branches. It was heartening to find that the writers thought this recommendation long overdue. Many letters included an immediate gift of £1, or an extra donation of 7s. 6d. to bring the current subscription even for 1953 from 12s. 6d. up to £1. Some suggested that we ought to increase the subscription to 25s.

Fewer than 20 letters expressed disapproval of the proposed increase, and only one of these came from a branch.

Many of the letters included thoughtful suggestions and criticisms, for which I am especially grateful. A few wrote to say that the contents of recent issues of *Geography* were of little use. About three times as many complimented the officers on the excellence of recent numbers and asked for more like them. A few reported little interest in any article that savours of "research," but as many others wrote appealing for an increase in the proportion of such articles! There were practical suggestions regarding ways and means of increasing income, many of which have already been under review by the executive committee. An increase in the price of *Geography* to non-members, an approach to Life Members to make voluntary donations, and an immediate increase in Life Subscription rates are cases in point. The problem of increases

in student subscription rates is one that troubles some branch secretaries, though it is clear that adjustments must be made for such members no less than for others. An increased subscription paid by termly instalments might solve the problem.

Some members felt that an increase from 12s. 6d. to £1 was too much to make "in one bite," and would prefer to make it in two or three instalments over a period of several years. In view of the administrative and banking difficulties (i.e. Bankers' Orders) involved in such a procedure, and the need in any case for the immediate full increase, it was a relief to find that about as many members wrote applauding the policy of making the full change by one major operation.

At the meeting of Council, held during the Annual Conference, it was finally decided that, in the light of the facts of the case and after full statement of opinions, the Annual General Meeting should be asked to approve a change to *one guinea* and not to one pound. The ensuing Annual General Meeting was well attended by about 250 members and in the course of the business the President read the recommendation from Council, as follows :

"That Council approves the recommendation of the Finance Sub-Committee and the Executive Committee that favourable consideration be given at the Annual General Meeting in 1954-5 to a proposal that the annual subscription to the Association be raised to one guinea and that during the intervening year 1953-4 members be invited to raise their subscriptions accordingly."

The discussion to which this proposal gave rise was concerned not only with the wisdom or otherwise of raising the subscription, for this was in the main accepted as inevitable, but also with a constitutional point. The restrictive clause in our constitution which declares that any change in the statutes must be approved by two Annual General Meetings before it can become operative evoked some vigorous comments, though it was agreed that we cannot act in an unconstitutional way. A substantial majority approved a new subscription of one guinea rather than one pound, and finally the President from the chair expressed the hope that while subscriptions could not be demanded at the proposed new rate until after January 1st, 1955, when the second reading of the proposed change should be passed, members would none the less voluntarily make their payments of subscriptions due on September 1st, 1954, at the new rate of one guinea. It is my real hope that all members will support the Association in the spirit of these meetings and I take this opportunity of expressing my most sincere thanks to those who have already so generously responded by letter and gifts.

It may here be remarked that a few letters were received—not two per cent. of all the replies—that were disconcerting in that they expressed the view that a subscription of £1 would not be paid, as the

writer felt that he or she would not *get out of the Association* the value of this sum ; or questioned whether membership is worth even 12s. 6d. ! Such argument can have no reply. As we all know, the Association has grown to its present standing and recognition in educational spheres from the efforts of those members who have supported it in a spirit of constant endeavour to give something to it. This process of "giving" has been a remarkable feature of the Association and indeed its main strength. It has found expression in gifts of money, large and small ; and in the vast expenditure of time and energy freely given by branch officers, by the organisers of our conferences, by our lecturers, by members of the editorial board, by leaders of local excursions and of field classes, by section committee members, by book reviewers, and by many others. Without this widespread effort the Association would indeed be moribund.

In forty years time our centenary will be celebrated, that is to say, within the lifetime of some of our younger members who may then be at the helm. Let it not be theirs to record that we teachers of geography in the mid-century failed to perpetuate in full measure the pioneer spirit and enterprise of the founders and elder statesmen of our Association. Rather let it be remembered that like them we too are not unmindful of the precepts written in that other Elizabethan Age : "I hold every man a debtor to his profession from which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and an ornament thereunto."

ALICE GARNETT.

THE COMMONWEALTH IN THE GEOGRAPHY SYLLABUS

ADDRESS TO THE GEOGRAPHICAL ASSOCIATION

DR. O. J. R. HOWARTH, O.B.E.

President, 1953

THE Geographical Association is one of those societies which have made the wise provision that the delivery of their president's address should be his last duty, not his first. I recall the case of a society, one of whose presidents started his year of office with an address in which he told the society what it ought to do, and spent the rest of his time arguing with his Council, who disagreed with him. The result was that that particular term of office provided enjoyment for nobody. That cannot happen here. You can listen to me, if you will, with the comfortable feeling that having said my piece I shall retire forthwith, like the octopus, into obscurity.

For I, who have never taught geography, and have not even examined in it for forty years or more, am about to tell teachers of geography of something I would like to see done in geography courses, because I believe it ought to be done, very much more effectively than the present prescribed courses permit. As a text, I offer a letter which I happened to read in a newspaper a few months ago. This is how it ran :—

Hearing Sir Winston Churchill's speech at the assembly of Prime Ministers of the Commonwealth, it occurred to me, for the first time, that myself and my children are not just ordinary people but members of this great Commonwealth. Why, in Heaven's name, have we not been educated to this fact ?

I do not know why, in Heaven's or any other name, but I sympathise very much with the writer of the letter, because I have never been able to feel that the Empire and Commonwealth are given their due position in our educational system. A leading article in *The Times* not long ago began with the words : " The need for schools to instil some knowledge of the Commonwealth is always being declared." Well, I am going to declare it again, because it seems to me that the letter and the leader just quoted indicate the existence of a problem which geography should help to solve. The writer of the letter was not asking for knowledge of the territories of the Empire and Commonwealth, but for the inculcation of a sense of membership of the Commonwealth, an object of even higher achievement ; but surely the knowledge must be an integral and fundamental part of the achievement.

We Victorians soaked the Empire in through our skins, I suppose ; certainly in my own education I have no recollection that it ever was mentioned. I daresay I acquired my reverence for it through the

works of Rudyard Kipling, and by saying this I realise that I am dated—dated and unashamed. But the Empire in my youth was all about us. Of our overseas territories we were apt to speak vaguely as “out there,” a phrase which in retrospect seems somehow derogatory, though I am sure we did not mean it so. Queen Victoria was Empress of India; the pomp and circumstance associated with empire in India were widely and very properly appreciated, and here at home it was probably India, with Kipling’s inspiration, that principally livened the sense of empire in those days. The Indian Civil Service had a large annual intake of recruits, and one met them at the university serving their year’s probation, learning something of the country in which they were to do their work. Yet it may be doubted if one person in a thousand at home (or one in a hundred thousand elsewhere) really appreciated the vastness of British achievement in India; indeed there has recently been a curious tendency on the part of some persons to apologise for our administration of that country. Such an attitude of mind must be based upon ignorance or misguided ideology or both: the two are only too commonly compatible.

Our conception of the bigness of the imperial territories in comparison with our own little island was probably vague as a rule; but I remember the very day and hour when for the first time that bigness really thrust itself at me. The occasion was my first visit to an overseas Dominion—Canada, it was; the time, the fresh morning of a lovely day in late summer; the place, Father Point on the south bank of the St. Lawrence, where the steamer from England called to land mails. And thence to the north of us water stretched to the horizon: the St. Lawrence is thirty miles wide there—a river half as wide again as the Straits of Dover, at a day and a half’s steaming from the open sea. A trifling experience, maybe, and large numbers of people have had the same: you must forgive me for dwelling on it: the recollection, which is forty-five years old, still gives me pleasure. You have perhaps some memories like it—they are worth holding to. But they are not easy to communicate to others. So far as concerns overseas territories as conceived by many in this country, there is some tendency to view them, as it were, through the wrong end of the telescope. You probably know of the ingenious demonstrator who by means of suitable photographic trickery erected St. Paul’s Cathedral, on the correct scale, in the gorge of Victoria Falls. No doubt such an artifice impressed upon pupils the magnitude of that natural wonder; but the method, perhaps fortunately, is not capable of very wide application. For children whose only familiar horizons are hedges or streets, the appreciation of wide expanses and scenic splendour must indeed be difficult to acquire, unless some inherited primitive instinct for the beauties of nature comes to the aid of the pupil, and through him to that of his teacher. Yet the attempt to arouse that appreciation should surely be made in all, as it is made, and successfully, in some of our schools. I shall return to this subject for a moment later on.

The admiration of the Victorian Empire was, I should think, in

large measure an object of taste and fashion, as is no doubt the admiration of the Empire and Commonwealth today. But in the period between the two great wars, when a great many people dreamed a great many varieties of nightmare, the Empire, as an object of taste and fashion, declined from its high place in the estimation of many. I remember—it must have been in the early thirties—a young person of some twenty winters stating in my hearing that the growth of the British Empire was the most brutal chapter in human history. He was an extremist, but there were said to be a number like that in those days. Probably there are fewer now ; but there are plenty abroad, and some at home, who (whether or not the wish be father to the thought) will tell you that the Empire is breaking up. It is not : it is in process of evolution, a very different matter. Breakage connotes a process of force ; evolution does not. Evolution may be momentarily painful when foolish persons apply a wrench to it—but this is no place to embark upon the tempting course of a diatribe against politicians. If, however, the process of evolution is well established, as it appears to be, and indeed is gathering momentum, then, I suggest, a much wider knowledge and understanding of the Empire and Commonwealth than at present exists, is required at this end, here, at home.

I have looked lately at a number of syllabuses of principal examining bodies in this country. For historians some study of Empire history is very commonly indicated as a permissible alternative to other choices. It appears that not many candidates make that particular choice, and I have heard it asserted that history courses on the Empire are notoriously dull. I do not know the grounds for this statement, nor do I see why the history of the Empire should be any duller than other historical courses. In fact I do not believe the assertion. But I do believe that a course on the history of the Empire must lose value unless it is given its geographical setting. “Very well,” the geography teachers may say with some justice, “let the historians learn to provide the geographical settings : it is their job.”

It may be ; but I have referred to history syllabuses only to point the contrast with those for geography. In only one of the geography syllabuses which I have seen are the Empire and Commonwealth even mentioned. The University of London, in its geography syllabus for the Ordinary level, prescribes that “attention should be directed to the British Empire from the point of view of its world setting.” No doubt you understand what that means ; if I do, it is insufficient from the standpoint I am trying to establish. The London syllabuses for the Advanced and Scholarship levels do not refer to the Empire, and none of the other examining bodies whose geography syllabuses I have seen lately refers to it at all.

To my mind this is wrong. Reverting to my texts, on the one hand we had the correspondent asking why he and his children were not taught to be citizens of the Empire ; on the other hand *The Times* was arguing that attempts were always being made to stimulate interest in the Empire, and were at least not conspicuously successful. These

two quotations suggest that there must be a missing link between latent interest and its satisfaction. Whose business is it to provide the satisfaction? At the outset, I submit, the geographers'. The leader I have quoted cited as a reason for lack of interest in the Empire the fact of the remoteness of its component territories from the mother country. But on that showing, the teaching of almost any geography except that of the home land and its nearest neighbours, should connote lack of interest; and we know that it does not, when the school curriculum affords scope and opportunity to the subject. I take leave to suppose that qualified geography teachers are competent to arouse and maintain interest in their subject. I am not asking that the Empire should be thrust down the throats of pupils. There was a reference just now to Kipling: you may at this point remember how, in *Stalky & Co.*, a politician came to the school to lecture on patriotism, and at the conclusion posed himself under the Union Jack; "This man," said M'Turk with conviction, "is *the* Gadarene swine." The Union Jack is no doubt the loveliest national flag ever designed, both in appearance and in its implications, but there is no need to wag it too fiercely.

It has been a satisfaction to hear recently of certain schools in which the teaching of geography is shaped to a particular end, that of training for world citizenship. But if the geography course can be directed to that object, so it can be to training for citizenship of the Commonwealth, and so I believe it should be; citizenship of the Commonwealth taking precedence, in my view, of citizenship of the world. This opinion is arguable, I know, or, alternatively, open to flat repudiation; but turning aside for a moment from geography I am prepared to defend the belief that the British Empire is unique among empires in being founded on principles of liberty—principles not always immediately capable of realization, but always intended to become so in the long run: therefore I submit that, for us, preparation for world citizenship is best achieved by means of the intermediate step of preparation for citizenship of the Empire and Commonwealth. And surely world citizenship and Commonwealth citizenship ought not to be thought incompatible. In a recent article in the *Unesco Courier*, on Teaching World Understanding in the Geography Class, M. Louis François, inspector-general of public education in France and secretary-general of the French National Commission for Unesco, dealt comprehensively and sympathetically with the subject; but he entered this interesting caveat: "Education for living in a world community is merely the complement and the development of living in a national community." I am trying to argue that insofar as the British Commonwealth is not a national community, every endeavour should be made to make it so. And one such endeavour should be to give it priority in the geography course and examinations in the Mother Country, so that every pupil who takes such a course (even if not the examination also) has the opportunity to acquire some knowledge of the Empire and Commonwealth of which he

or she is a citizen. I do not see how any other course but that of geography can lay the foundation of such a knowledge. But the examination syllabus, if I conceive the position rightly, ought to point the way, by requiring special attention to British territory at every stage. I do not doubt that there are many teachers of geography who pay that special attention as matters now stand, under the incentive of their patriotism. And I am asking for something to be made compulsory which is not compulsory now—always a debatable proposition.

But the Empire and Commonwealth stand ready to be included on their merits in whatever system of teaching geography you may choose. The aphorism of Christopher North, who wrote of "His Majesty's dominions, on which the sun never sets," is one of the most notable geographical generalizations ever pronounced (for one reason, because of its accuracy, a quality which so many geographical generalizations do not share). We might venture on an imitation, and speak of the Empire of all the regions, for that is true, too. Set out to illustrate whatever physical conditions, whatever human activities influenced by physical conditions, and you will find that there is some tract of British territory to illustrate them.

I seem to be suggesting that the geography course should pass straight on from the Mother Country to British territories overseas, and if I am allowed to do that, then in the congested state of school curricula I ought also to be suggesting that something should be left out of the geography course to make room for the Empire. But it is difficult for me, who have never taught, to indicate to you, who do teach, what might be omitted, and I am not going to try to lay down the law. It may be regarded as folly if I admit that it has long seemed to me that at certain stages of the curriculum too much time has to be given to the geography of the homeland. Sometimes, again, in reading syllabuses, I have checked at, say, some adventitious chunk of a continent or the world set as an area for special study. In most cases, probably, such a chunk has some British territory in it. In my examining days there used to be a favourite special subject called the three southern continents. I was not alone in believing that three continents were too big an area to be properly studied as a special subject; that we did not care much about the three southern continents as such anyway—but that we did care immensely about Australia and New Zealand, South Africa and the other British African territories, and even British Guiana. There was nothing in the syllabuses then to suggest that special attention should be given to British territories, any more than, so far as I know, there is now, with the exception that has been mentioned. But sometimes—rarely—one came across a group of pupils whose teacher had obviously inspired them to give that special attention, and that was a recommendation to some examiners. And I am not prepared to admit that we were wrong.

As for the Empire and Commonwealth as a whole, I have heard it argued that it is not sufficiently near a unit to make it an easy subject of

geographical study. The question of ease ought surely not to enter ; the day is past when geography used to be thought a soft option from the standpoint of examination : I would rather say that it is precisely because the Empire and Commonwealth is not a unit and is not easy of study that it should be studied. Whatever the approach to geography may be, I suggest that it should introduce every pupil who takes the course at the very least to the distribution of British territories, to their physical characters and human activities, and to the mechanism of empire ; so that no pupil should feel the least inclination to say (for example) that Scotland is a colony of England, and that all should comprehend (or at least have the chance to comprehend) the various types of territory—crown colonies, protectorates, protected states, trust territories, the Dominions, the republics within the Commonwealth.

The Mother Country, British territories overseas, the rest of the world—such is my order of preference of subjects for geography teaching. In curricula in which time for geography is restricted, my third category—the rest of the world—would almost disappear : only the very strongest features of the world outline would be presented. If I had to formulate a series of alternative areas for special study, I would set down the major divisions of the Commonwealth in preference, say, to Western Europe or the Soviet territories. Indeed, of all the divisions of the world which are within my knowledge as being offered in syllabuses for special study, I believe I would retain only the Mediterranean region. You may say that this is inconsistent. Perhaps it is ; but the concern of the Empire with the Mediterranean region is intense, and the region itself is of such profound physical and human interest, that one can scarcely imagine it being left out of any Advanced or Scholarship syllabus.

Returning to the Commonwealth : it is not suggested that the dominions should wholly overshadow colonial territories. The British colonial service offers opportunities for a very noble career in the service of mankind. A distinguished member of the service may be quoted for the statement that “ the spread of a little more knowledge through even a small section of the great British public about its colonies is very badly needed.” He also has written of “ the great educational project which is the British Empire of today,” the education being directed toward the advancement of human welfare and the understanding and practice of proper methods of government. It is an exalted object, difficult of attainment, for the standard of political science in the civilised world seems to be far below that of science at large. It is for us, then, to assure the supply of teachers in the field of knowledge of the Empire and Commonwealth. The source of this supply must be found in our own educational system, and within that system, as I have ventured to suggest, the foundations should be laid in the geography courses.

For a speaker to have to contend with the sense that his audience knows his subject better than he does himself is a drawback. No doubt

you know better than I of all the sources of information that are freely available to those who would study Empire geography—the offices of High Commissioners and Commissioners, the official information agencies, and such organizations as the Royal Empire Society, the Victoria League, the Empire Day Movement, and that long-suffering establishment the Imperial Institute, which has to endure the incubus of a singularly unattractive building and an inadequate shop window, and yet has accomplished, and offers, so much more in the service of the Empire than is generally understood. Again there is the work, admirable so far as concerns the colonial territories, carried on by the Colonial Research Council. There are also the various organizations concerned with migration. But it appears to me—though I say this with diffidence—that only the teacher can, and I believe he should, maintain the bridge between these sources of information and the geography class. Perhaps I shall be answered that this is done commonly by teachers; that I am preaching to the converted. I am delighted if this should be so. But I have had the privilege during my year of office of reading reports by committees of the Association on the present position of geography teaching in schools of the various types; which committees I take this occasion most sincerely to thank. In only one of these reports, that on the public schools, was there a reference to teaching the geography of the Empire specifically, and that in only a few schools. Is imperial geography indeed the preserve of a few public schools? One would be sorry to suppose so.

Again, the word migration was mentioned a moment ago. I have never forgotten two instances of unsuccessful migration which came within my own knowledge. One was that of an agricultural worker from the south of England, who went to Canada ostensibly because he wanted to better himself, and after a year came back for the sole reason that he found the winter too cold. The other case was that of some people who emigrated, also to Canada, from what was then one of the worst slum areas in London—Notting Dale. These people went to prairie farms, but soon came back to their slum. The prairie was too lonely. Were these unfortunates to blame for not having ascertained conditions of life in Canada in advance? Perhaps, but there is also the possibility that they never were taught or told of the conditions they would encounter. Admittedly these incidents happened many years ago, but one would hesitate to assert that similar cases could not occur today.

This question of teaching, or fostering, the appreciation of scenery—for both the cold winter and the loneliness of the prairie are elements of scenery in Canada—may seem rather primitive, and so in a sense it is, but it seems to me to be of very great importance. Elsewhere I have suggested it as an aid to inducing the attitude of mind which recoils from the spoliation of natural beauty in our own country. Now I am suggesting it as an element in the teaching of imperial geography—an essential means of conveying to pupils the likeness of the land which they are studying. To me this appears fundamental. If it were my

business to try to teach the appreciation of scenery, I believe I should begin with the large-scale map, go on to correlate this with photographs from the air, and then try to correlate both with surface photographs. The extent of my ignorance is such, however, that I do not know whether this method is either customary, or on the other hand impossible, so no more need be said of it.

One wonders whether, if the teaching of imperial geography were more generally recognised as an essential part of our educational system, we might have been spared the difficulties and losses in Tanganyika which were suffered in the last few years. One of our most eminent geographers has called that episode a geographical crime. I am not suggesting that the schools could in any circumstances teach imperial geography in such detail as to insure that responsible persons would have understood conditions in Tanganyika as apparently they did not ; but people with geographical training know or are capable of learning the sort of concomitant material conditions which would affect any particular enterprise, and they know where to look for information because they depend for their knowledge upon so many sources of information.

Then was there not some regrettable business connected with hens in West Africa ? I confess to knowing nothing of the geography of hens, but it sounds a rather fascinating subject, though not perhaps for the school or even the university syllabus. After that unworthy digression, however, let us try to do justice to work which is done in pursuit of knowledge of the Empire. Such work ought not to be ignored. It seems to meet with all too little response from the direction of public understanding.

It may be said that I am inviting the schools to create a line of good little imperialists. And why not ? What is asked is that a higher percentage of geography pupils should become interested in the British territories overseas—a substantially higher percentage, no more than that, but no less—and with the territories, in their inhabitants, of course. One then envisages such pupils prepared in their future careers not only to appreciate the physical merits or demerits to be found in the imperial territories, but also to begin to understand the problems encountered (or created) by their peoples and governments. Once, a good many years ago, in a South African train, a conversation with an amiable and cultured Indian gentleman, with whom I was sharing a compartment, was interrupted by an adamant conductor who stated that a coloured man (so called) was not allowed to travel with a white. That once, and that once only, I felt shame for imperial citizenship. And if you ask what has this to do with geography teaching in schools the answer is, this much : that imperial geography must be a foundation stone of imperial citizenship, and that the more truly those stones are laid, the less occasion, in the long run, for racial misunderstanding and segregation.

I should be the last to contest, however much I might regret, some such reflections on your part as these : Here is this elderly person, with

a whole hive of Victorian bees in his bonnet, supposing himself to have found a short cut to the inculcation of awareness of the Empire and Commonwealth, through the teaching of geography in schools. In fact, I am less dogmatic than I may have sounded. But I should dearly like to hear of an inquiry, with evidence taken from both teachers and persons otherwise interested in the dissemination of knowledge of the Empire and Commonwealth, as to whether, and if so on what lines, a more intimate teaching of such knowledge should be encouraged in schools in this country; and in particular whether examining bodies should be urged to prescribe in their geography syllabuses the requirement of such knowledge. I do not presume to dictate that the Geographical Association ought to initiate such an inquiry; but I can imagine no other body better qualified to do so. It would be surprising if the Association were not able to secure from other interested organizations all the collaboration that might be desired. I suggest that such an inquiry might result in a report of extreme interest and value, and to consequences of high importance to the Empire and Commonwealth.

THE ORANGE FREE STATE GOLDFIELD

PETER SCOTT*

THE discovery of the Orange Free State goldfield ranks with the Kimberley diamond and Witwatersrand gold discoveries as one of the most outstanding events in the economic development of South Africa. The new goldfield will shortly assume a major role in the Union's economy, but partly owing to the great depth at which the gold occurs and partly to the intervention of World War II, its exploration and development have been slow and costly.¹ Not until October, 1951, almost exactly seventeen years after the first borehole was sunk, was the first gold bar produced. But now that production has begun and the extent and character of the resources have been largely determined, it is possible to review the salient features of the field, which at least in structure and reef conditions differs markedly from the Rand.² Although some of the difficulties encountered in development, such as the provision of power, water, labour and transport facilities, recall the early days on the Rand, the scale of operations has been far greater. In fact, the average milling rate of the 13 mines

* Mr. Scott, who is now senior lecturer in charge of geography at the University of Tasmania, was formerly lecturer in geography at the University of Capetown, Rondebosch. He contributed an article on the iron and steel industry of South Africa to the 1951 volume of *Geography*.

¹ To bring the 13 established mines to the producing stage will necessitate a capital expenditure exceeding £100,000,000.

² See Peter Scott, "The Witwatersrand Gold Field," *Geogr. Rev.*, vol. 41, 1951, pp. 561-589.

so far established will substantially exceed that of the existing mines on the Rand. As a result, the goldfield has witnessed since 1946 the creation of four new towns and the rapid growth of many others. Every phase of this expansion has been controlled by the South African Natural Resources Development Council. The Free State goldfield thus provides a striking example, in contrast to all other goldfields and most other mining areas, of regional planning on a large scale.

THE PHYSICAL SETTING

The goldfield surface is a relatively flat expanse of sandy veld, broken only by an isolated dolerite hill, 150-foot Koppie Alleen. The land averages 4,500 feet above sea-level and receives an annual rainfall of 15 to 20 inches. Except for the Sand River, a tributary of the Vaal, drainage is localised, particularly in the north-west, to a series of salt pans occupying shallow depressions. Before the discovery of gold, much of the land was devoted to extensive maize farming, though occasional eucalyptus plantations and sheep pastures added some variety to the landscape. Virgin veld was confined to uncultivable areas of rock outcrop and to riverine areas in the south.

Nowhere in this region are the gold-bearing conglomerates, called reefs, exposed at the surface. They occur in the pre-Cambrian Upper Witwatersrand sediments, which occupy a shallow wedge-shaped syncline beneath 300–4,000 feet of younger Ventersdorp and Karroo rocks. The western flank of the syncline trends south-south-eastwards past the towns of Allanbridge, Odendaalsrus and Welkom, while the eastern flank trends south-westwards from Kroonstad past Hennenman and Virginia (Fig. 2). Outside this region, despite fifteen years of intensive geophysical prospecting and drilling, no new mining area has been found, while within the region, two block-faulted areas, where the reefs occur below the maximum depth of economic mining, have been located.

In the payable areas, reef values, though generally more irregular than on the Rand, promise to average nearly double (about 7 dwts. per ton) the average grade of Rand ore milled at present (3·759 dwts. in 1950). The principal source of ore—in some mines, perhaps the only source—will be the Basal Reef, which occurs, somewhat intermittently, at the base of the reef zone. The depths at which the reef occurs, as well as its dip and strike, vary greatly, owing to faulting. Throughout most of the field, the depths range from 750 to 6,100 feet, but the bulk of the ore probably occurs at depths less than 4,500 feet. On the western flank, the dip eastward averages about 20 degrees near Allanridge, 10 degrees near Odendaalsrus, and 26 degrees near Welkom; in the south central area, near New Virginia, the dip westward averages 10 degrees. The reef comprises one or more indefinite layers of grits and pebbles, varying in width from a few inches up to 6 feet and averaging about 30 inches. The gold content seems to be erratic near the suboutcrop, but improves progressively both in continuity and amount with increasing depth. Even so, payable ore seems to occur in lenses. The

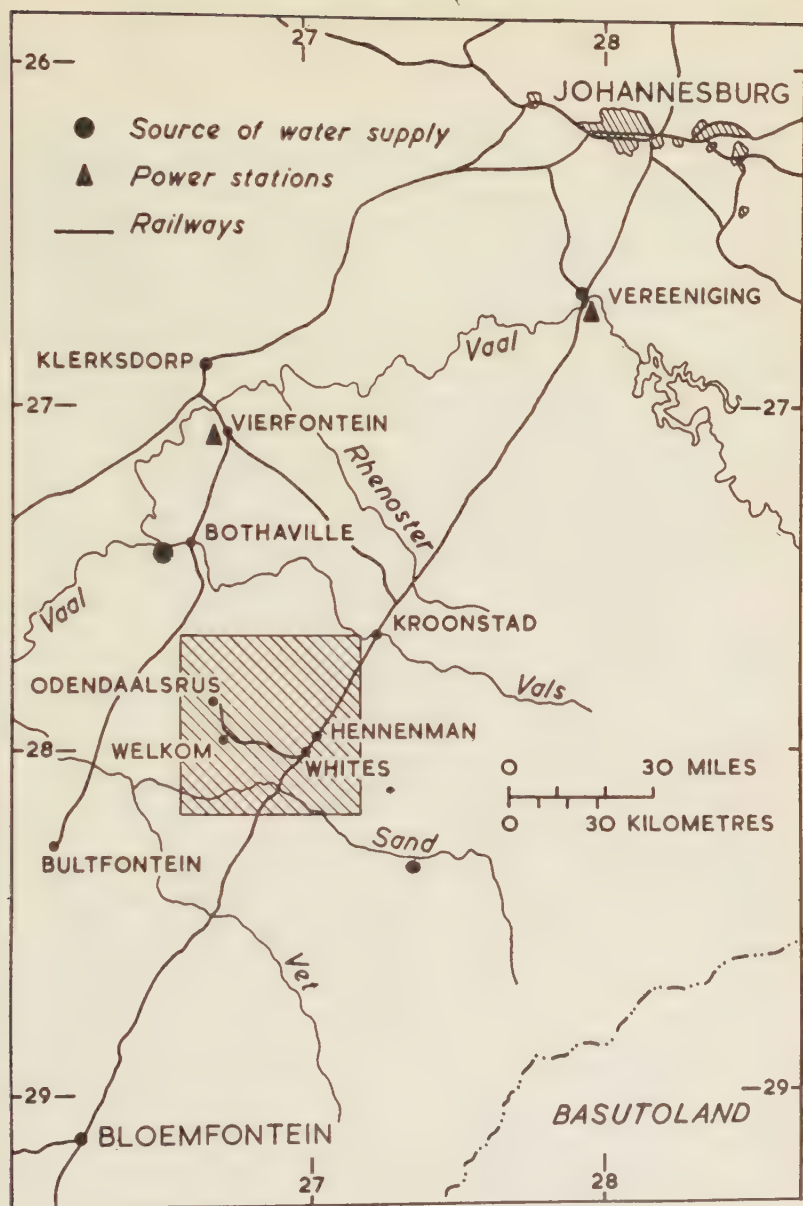


Fig. 1.—Location of the Orange Free State goldfield.

Basal Reef is separated by 30 to 60 feet of overlying quartzites from the more consistent but usually narrower and far less valuable Leader Reef. These two reefs have been correlated with conglomerates of the Bird Reef group, which on the Rand have rarely been payable.

Other gold-bearing horizons are, in order of importance, the B Reef, the A Reef (of local occurrence and thought to be lens-like), the Upper Reefs, and the Ventersdorp Contact Reef. They all occur

above the Leader Reef and have been correlated with the lesser reefs of the Rand.³

MINING AREAS AND MINING CONDITIONS

The reef-bearing areas may be classified according to existing knowledge of their payability. Of the developing mines, ten are located on the western flank of the main syncline, where they extend contiguously for 22 miles southwards from Allanridge and up to 7 miles eastwards from the suboutcrop, and three lie athwart the Sand River in the south central portion of the basin; altogether the claim areas cover more than 160 square miles. "Probable mining areas" occur west of Whites, where two mines will almost certainly be established, and at Van den Heeverrust between Loraine and Freddie's North, where borehole intersections of the Basal Reef have furnished outstandingly high gold values. In the "possible mining areas," investigations have so far been encouraging; if success continues, two small-tonnage mines may be located on the eastern flank, where the A Reef has proved payable at shallow depths south-east of Hennenman and the Leader Reef east of Virginia, and two large mines located west of Harmony mine. In other areas where mineralisation has been proved, even though the position of prospective mines cannot be indicated at this stage, three mines may be established. In short, the Free State goldfield may eventually contain 21 large mines, dependent mainly on the Basal Reef, and two small mines, working mainly the A and Leader Reefs.

Adverse mining conditions include intense faulting, high rock temperatures, and the presence of underground water. Although the area west of Virginia appears to be comparatively undisturbed,⁴ on the western flank both block faulting and minor faulting, with vertical displacements ranging from a few feet up to 1,800 feet, are far more prevalent than on the Rand. In fact, the maximum extent of continuous reef so far discovered is only 1,000 feet. Moreover, the overlying Karroo shales and, to a lesser extent, the Ventersdorp lavas have a low thermal conductivity and steep geothermic gradients, so that temperatures at a depth of 5,000 feet are comparable with those at 8,500 feet beneath the quartzites of the Rand.⁵ At depths greater than 4,500 feet it would therefore seem desirable, and below 5,000 feet essential, to cool ventilating air by refrigeration.⁶ On the other hand, the comparative shallowness at which high temperatures occur facilitates ventilation, though the presence of underground water, necessitating cementation of the shafts and even of underground

³ Vivian Baines, "The Geology of the Odendaalsrus Goldfield," *Trans. Geol. Soc. S. Afr.*, vol. 52, 1949, pp. 301-330.

⁴ *S. Afr. Min. Eng. Journ.*, vol. 62, pt. 1, 1951, p. 173.

⁵ R. Borchers and G. V. White, "Preliminary Contribution to the Geology of the Odendaalsrus Gold Field," *Trans. Geol. Soc. S. Afr.*, vol. 46, 1943, pp. 127-153; reference on p. 134.

⁶ C. Biccard Jeppe, "Shaft Sinking and Development in the Orange Free State Goldfields," *Optima* (a quarterly review published by Anglo American Corporation of South Africa), vol. 1, no. 2, Sept., 1951, pp. 8-19; reference on p. 19.

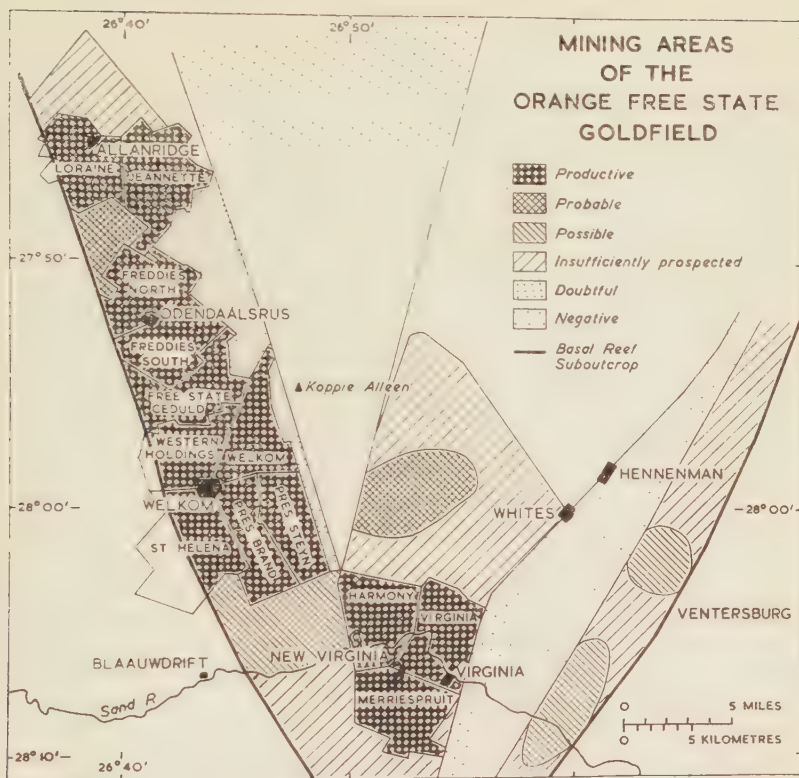


Fig. 2.

workings, has made humidity control difficult. The water-bearing fissures, which occur mainly beneath the Ventersdorp lavas, had not been foreseen, because the dolomite formation, which contained such formidable reservoirs on the Far East and Far West Rand, is absent. Nevertheless, delays in shaft sinking due to cementation have on the average prolonged sinking operations by as much as 25 per cent.,⁷ so that most of the 26 large shafts being sunk will have taken at least 3 years to reach a depth of 4,000 feet. In time, however, shaft sinking and underground development may appreciably drain the mining areas of water. In 1950, the St. Helena mine alone pumped 757 million gallons to the surface.

WATER AND POWER SUPPLY

Whereas mine water provides about half the water requirements of the Rand gold mines, in the Free State mine water is generally too saline, except perhaps near the Sand River, for use in reduction plants. Moreover, partly owing to the lower rainfall and higher evaporation rate, the yields are generally too small to repay purification. Consequently, the Free State mines have to be supplied with substantially more water per ton of ore milled than mines on the Rand. The Vaal

⁷ *Ibid*, p. 15.

River, the obvious source of supply, is having increasingly heavy demands made on it by industry and mining in the Southern Transvaal. Consideration was therefore given to using the waters of the Rhenoster, Vals, Sand and Vet Rivers, all tributaries of the Vaal in the goldfield region (Fig. 1). It was decided, however, to make use of a natural pool on the Vaal at Balkfontein, some 5 miles west of Bothaville. This has permitted the supply of water at considerably less cost and far more quickly than if weir construction on the Vaal tributaries had been necessary. In any case, the Vet and Sand Rivers lack suitable sites for large dams, and the Rhenoster and Vals Rivers, representing about two-thirds of the supply available in the four tributaries, are utilised in the Balkfontein scheme. The water is pumped for 44 miles to reservoirs on Koppie Alleen, situated about 1,000 feet above the Vaal level at Balkfontein. From Koppie Alleen the water is distributed by gravity to the mines and townships of the region. At present the supply amounts to 4 million gallons a day, but by 1955 it will be increased to 16 million gallons and eventually, when perhaps 20 or more mines are producing, to 64 million gallons.⁸

To supply the electric power requirements of the Free State goldfield, as well as those of the Klerksdorp mines, a power station, designed for an initial output of 210,000 kilowatts and an ultimate output of 300,000 kilowatts, is being built at Vierfontein, about 55 miles north of Odendaalsrus. Although its location was determined primarily by the local occurrence of substantial coal deposits, an important contributory factor has been the proximity of the Vaal River, from which water for cooling purposes will be pumped at the rate of about 3,000 gallons a minute; in addition, the existence of the railway has facilitated the assembly of heavy plant. The coalfield contains only one workable seam, varying from 48 to 90 inches in width and occurring at depths ranging from 30 to 300 feet, but the seam contains perhaps 700 million tons of low-grade coal.⁹ After World War I, two collieries worked the deposit, but in 1921, unable to compete in distant markets, the collieries were closed down. In 1950, one of the collieries was re-opened and will shortly resume production. The coal will be brought to the surface by endless rope haulages in incline shafts, and the colliery will be interconnected with the power station. Output in excess of 155,000 tons of prepared coal a month, the estimated requirements of the station, will be sold to domestic consumers on the goldfield. The station will employ about 140 Europeans and 300 Natives, and the colliery about 200 Europeans and 3,300 Natives.¹⁰ A new township has been established nearby. It is expected that the supply of electricity will begin before the close of 1952. Meanwhile, the Vaal power station, situated 6 miles

⁸ "Water Supplies to the O.F.S. Goldfield," *S. Afr. Min. Eng. Journ.*, vol. 60, pt. 2, 1949-50, p. 151.

⁹ *The Mineral Resources of the Union of South Africa*, Dept. of Mines, Pretoria, 1940, p. 377.

¹⁰ *S. Afr. Min. Eng. Journ.*, vol. 62, pt. 2, 1951-52, p. 7.

south-east of Vereeniging and 110 miles north-east of Odendaalsrus, is meeting the goldfield's requirements.

COMMUNICATIONS

Since most of the goldfield is remote from the main roads and railways of the Free State, it has been necessary to augment pre-existing lines of communication. The goldfield obtains the bulk of its iron and steel requirements from Pretoria and to a growing extent from Vereeniging and much of its machinery and equipment from engineering plants at Vereeniging and on the Rand.¹¹ Consequently, a branch railway to Odendaalsrus, shortly to be extended northwards to Allanridge, has been built from the main Johannesburg-Bloemfontein line. Eventually, to provide an alternative rail link with the Rand, the line may be connected with the Bultfontein-Bothaville railway and even perhaps directly with Kimberley on the Capetown-Johannesburg line. Similarly, to provide a first-class road link with the Central Rand, a tarred highway is being built from Odendaalsrus to Kroonstad, and to provide a road link with the Far West Rand, another highway is to be built from Odendaalsrus via Vierfontein to Klerksdorp. Connections with the main Durban-Johannesburg road, and with Bloemfontein and Kimberley, may also be made. At present the goldfield has a network of all weather gravel roads, but tarred surfaces will soon become essential. Finally, mention should also be made of the commercial air service, which operates twice daily between the Rand and the goldfield, and of the private air services operated by the Mining Houses.

POPULATION AND SETTLEMENT

The development of gold mining has profoundly changed the settlement pattern. From an essentially dispersed agricultural type, with market towns each housing fewer than 500 Europeans, settlement has become predominantly urban. At the 1946 census, the urban population of the goldfield totalled 5,320, of whom 1,477 were Europeans and 3,843 Natives. By the close of 1950, the over-all figure had multiplied more than eightfold, and two new townships had been established. Odendaalsrus and Hennenman, which in 1946, had European populations of 483 and 415 respectively, now contain considerably more than 3,000 each, and Virginia, which housed only 171 Europeans, now contains well over 1,000. Moreover, Welkom, one of the new townships located on a site that was bare featureless veld in 1946, now boasts a population of more than 20,000, of whom at least 8,000 are Europeans. Already one of the largest towns in the Free State, Welkom will soon rank second only to Bloemfontein. Allanridge, another new township, was started in 1950, and plans for further townships at Blaauwdrift and New Virginia, on the banks of the Sand River, have been completed. Within the next few years, as the developing mines begin producing, the rate of population increase will be accelerated. It has been estimated that by 1966, the population

¹¹ Peter Scott, "The Iron and Steel Industry of South Africa," *Geography*, vol. 36, 1951, pp. 137-149.

will total about 146,000 Europeans and 277,000 Natives,¹² even though the mines themselves will provide employment for only 15,000 Europeans and 150,000 Natives.¹³

Most Native employees are migrant labourers accommodated in large double-storeyed hostels, comparable to, though decidedly better than, the mine compounds of the Rand. About 10 per cent,¹⁴ however, are married Natives accommodated with their families—in sharp contrast to the lot of the urbanised Native on the Rand—in model villages of detached or semi-detached houses built by the mining companies. Eventually there will be seven villages, each of which, like the hostels, will house about 2,500 people. These resident families will provide the nucleus of a stable labour force, and it is hoped that the Free State will thus be less dependent than the Rand on a fluctuating supply of migrant labour.

Population expansion due to the development of mining has not been confined to the goldfield. Kroonstad, 40 miles northeast of Odendaalsrus, and Bloemfontein, 100 miles to the south, have both undergone striking growth. Although the goldfield at present derives much of its supplies as well as its technical and economic control from the Rand, Bloemfontein, the Free State capital, is steadily gaining importance as an administrative, cultural and supply centre.

FUTURE PRODUCTION

In 1951, the St. Helena and Welkom mines began producing, and by the close of 1957, all the 13 mines so far established are expected to be in production. By 1966, given an adequate labour force, producing mines should number more than 20. But because the mining properties resemble those of the Far East Rand, in that they are all delimited by suboutcrops or by other mines, the production period cannot be prolonged, as on the Central Rand and in the future on the Far West Rand, by progressively deeper mining. On the other hand, the average claim area is substantially larger than on the Rand, so that with a milling rate of 100,000 tons of ore a month, most mines will remain in production for at least 30 years and, given a high percentage of payability and more than one payable reef, perhaps even 50 years or more. Accordingly, the goldfield should reach its maximum production by 1970 and should not begin to decline until 1990.¹⁵ By the time it ceases production, probably long after the turn of the century, the over-all output may well have reached 350 million fine ounces, valued at £4,344 millions¹⁶—equivalent to nearly three-quarters of the total Rand production to date.

¹² "Third Annual Report of the Natural Resources Development Council, 1950," *Off. Journ. Dept. Com. Inds.*, vol. 9, no. 10, Pretoria, June, 1951, pp. 462-500; reference on p. 481.

¹³ C. Biecard Jeppe, *op. cit.*, p. 8.

¹⁴ H. Oppenheimer, "The Orange Free State Gold Fields," *S. Afr. Journ. Econ.*, vol. 18, 1950, pp. 148-156; reference on p. 153.

¹⁵ "Economic Aspects of the Gold Mining Industry," *Un. S. Afr. Soc. Econ. Planning Council Report*, No. 11, Pretoria, 1948, pp. 16-17.

¹⁶ W. P. de Kock, "The Influence of the Free State Gold Fields on the Union's Economy," *S. Afr. Journ. Econ.*, vol. 19, 1951, pp. 128-148; reference on p. 146.

BROKEN HILL, NEW SOUTH WALES

MEGAN C. ALLEN*

THE Broken Hill mineral field in Australia is one of the two leading producers of lead, zinc and silver in the world. The field has been producing continuously for almost seventy years and the output of marketable minerals to the end of 1951 was 65 million tons. Present reserves are in excess of 75 million tons and there seems little doubt that production is assured for another 60 years at least.

Broken Hill lies in the far west of New South Wales, some six hundred miles¹ west of Sydney, the state capital, and only thirty miles from the South Australian border. Its isolation is emphasised by the desolate and arid country which separates it from both the farming communities of the wheat belt some 300 miles to the east, and the irrigation centres along the Murray Valley 150 miles to the south. The climate of the region is severe. Temperatures are uniformly high during the long summer period (with extreme maxima of 110°–115° F.) and during the winter they rarely fall below 50° F. The average rainfall is only 9 inches per year, but neither the seasonal distribution nor the amount of fall is reliable. The highest yearly total on record is 16.5 inches and the lowest 2 inches, and moreover it is extremely unusual for two consecutive years to have a rainfall well above average. Streams are rare in the district; creeks, even when of considerable size, are completely dry except following heavy rain showers, and even these peter out in the sandy wastes. In the landscape the creeks are easily discernible for they have well defined courses which are lined with river gums. Elsewhere trees are scarce and the few there are (mostly species of acacia and chiefly *mulga acacia aneura*) are stunted and gnarled.

The mining area is located at the southern end of the so-called Barrier Ranges which are no barrier but merely an expanse of rough hills rising only a few hundred feet above the general level of the desert surface. The low, broken, shield-like topography is everywhere masked and partly buried beneath a windblown sandy mantle. Even the early mining site to the southwest, the Pinnacles, which possesses quite an outstanding name, forms only a minor detail of the landscape.

The lead, zinc and silver minerals occur in a lode, which has the form of a continuous low arch extending for over 3½ miles in a northeast-southwest direction. The present workings have been interrupted to the north by two faults, the British and De Blavay faults, while the actual limits of the ore body, both at the northern and southern ends have yet to be determined. At these ends the workings extend down

* Mrs. Allen is senior geography mistress at Meriden Girls School, Strathfield, Sidney N.S.W. Early in 1952, under the auspices of the Mining Institute, she and the geology mistress took a party of 30 girls to Broken Hill.

¹As the crow flies: the rail distance 703 miles.

to 3,000 ft. and plans have already been made to extend them deeper, for there has been no evidence of a falling off in the mineral content or a decrease in the size of the lode.

The rocks in the area are ancient sediments, probably of pre-Cambrian age, strongly metamorphosed to schists and gneisses, and injected with sheets of igneous material. The ore bodies, themselves are replacements of certain horizons of these altered sedimentary rocks by massive sulphides of lead and zinc. This replacement took place particle by particle, as the ore-bearing solutions passed through the rocks. For the greater part of their progress these solutions caused little change; it was only when they encountered a certain group of beds, that the sulphides were precipitated from solution. This process took place at a considerable depth beneath the surface of the earth, under conditions of high temperature and pressure, as is shown by certain of the gangue or worthless minerals deposited with the sulphides. The principal economic minerals in the lode are galena (lead sulphide), marmatite (iron bearing zinc sulphide) and in a lesser quantity chalcopryrite (copper and iron sulphide) and tetrahedrite (copper and antimony sulphide). The silver is found mostly in association with the tetrahedrite, and to a small extent with the galena. The chief gangue or worthless lode minerals are quartz, rhodonite (manganese silicate), calcite, fluorite and spessartite (manganese garnet). There are also small quantities of other silicates and sulphides.

The lode varies considerably in width, the greatest breadth being 300 feet. In the central part the lode outcrops at the surface and a considerable portion of it has been weathered. Down to the water-table, at a depth of from 150 ft. to 300 ft. according to the character of the ground, the lode has been oxidised. Water percolating from the surface had decomposed and altered the minerals of the lode chiefly by leaching out the sulphur content of the sulphides and leaving in their stead carbonate, oxide, sulphate and haloid minerals in a gangue of iron and manganese oxides. In the early days, mining was confined to this oxidised zone and some of the minerals obtained from it were rare and beautiful.

The discovery of ore bodies in the district was made in 1876 when silver was found at Thackaringa, some 30 miles west of the present site of Broken Hill. Charles Sturt, the explorer, had passed through the district of the Barrier Ranges in 1844 on his journey into Central Australia, but he was not conscious of the vastness and richness of the ore deposits in the region. He merely recorded the occurrence of "gneiss, garnet; much feldspar . . . and sandridges straight as an arrow."² Indeed, it was in the drought stricken wastes of this area that he and his party nearly met with disaster on account of the shortage of water. After Sturt's exploratory journeys, river settlements began to grow up on the Darling river, some ninety miles to the east

²Quoted by E. Andrews in *Memoirs of Geological Survey of New South Wales*, No. 8. "The Geology of the Broken Hill District," 1922, pp. 8-10.

and graziers gradually parcelled out the area in sheep stations. Some of these, such as Thackaringa and Mount Gipps were bounded only by the horizons, for the country was very poor and the mulga, blue bush and salt bush could support only one sheep on twenty acres.

The true discovery of Broken Hill's mineral wealth was made step by step. Following the Thackaringa silver finds, the Silverton field was discovered and in the few years after 1880 a settlement of over 3,000 people had developed there. McCulloch, the station manager at the Mount Gipps' sheep station, played a great part in these discoveries and it was he and his boundary rider, Charles Rasp, who eventually pegged out the leases at Broken Hill itself. In 1883 Rasp discovered, on the broken outcrops where Broken Hill now stands, what he believed was tin oxide. His samples were sent to Adelaide and revealed not tin bearing ore but silver and lead.

The development of the ore-body and of Broken Hill itself dates from this period. Leases were pegged and a syndicate of seven formed to work them, but their development has not been straightforward or easy. The mines have had to face a series of setbacks. After the initial rush, interest in the deposits lagged for the ore was considered to be low in silver content. A year later, however, silver chlorides of a far higher content were found in the shaft of one of the original workings and as a result the Broken Hill Proprietary Company was formed (August, 1885) to work the outcrop of the lode.

The difficulties of this early period were increased by the climate and the isolation of the area. The district was without an assured water supply and until this was supplied there could be no considerable settlement or intensive exploitation of the deposits. Further, the region of the Barrier Ranges was in the sparsely settled and remote "outback" and without any means of communication. The river Darling was 90 miles to the east, the river Murray 150 miles to the south and between these rivers and Broken Hill there were neither well established routeways nor settlements. Following the rich silver finds at Thackaringa and Silverton, the South Australian Government constructed a narrow gauge (3 ft. 6 in.) railway line to Cockburn, on the border with New South Wales, but it was not within their province to extend the line as far as Broken Hill. The New South Wales Government for their part found they could not finance or authorise the building of the railway extension, nor link Broken Hill with their own rail network which terminated some 350 miles to the east. So, for the first few years the food and other goods, needed by the miners, the coal for smelting the ores, the machinery for use in the mines were hauled from Cockburn to Broken Hill by the slow and laborious method of ox wagon. The much needed link with South Australia, also on the 3 ft. 6 in. gauge was complete by a private company in 1887, but not till 1927 was Broken Hill linked with the standard gauge New South Wales system and so to Sydney.

During this period the carbonate ores were smelted at the mines themselves and at several centres in South Australia including Port

Pirie. Coal used in the furnaces was brought by sea from Newcastle in New South Wales and transhipped by rail to the smelting centres. The carbonate ores were easy to work : they were mined chiefly by opencast methods and were comparatively simple to process. But by 1897 they were almost worked out and in 1898 the smelters at Broken Hill were closed down. The sulphide ores were deeper, more difficult to mine and occurred in a complex form with silver, lead and zinc thoroughly intermixed. The separation of the various minerals was a complicated problem, which was not solved during the period in which carbonate ores were being mined and treated, so that when the sulphide ores began to be mined they had to be exported in the raw state. It would have meant a great saving in transport costs if the ores could have been partly separated and concentrated before they left the mines. The difficulties involved in handling this new type of ore were nearly ruinous for the industry.

At the root of practically all the difficulties experienced in these early years was the lack of exact knowledge about the geological nature of the ore body. Until this was understood, neither the mining nor the development of processes to treat the ore could be securely based. Moreover the working conditions were far from satisfactory and during the first few years of the twentieth century grew steadily worse. For several years in succession strikes threatened the industry. Then in 1903 the main reservoir, Stephen's Creek, some ten miles to the north of the city became dry and the mines were compelled to cease working. Following this, in 1906 a period of fire devastated the mine workings. During this time the silver, lead and zinc ores were being shipped abroad for treatment, but in 1912 the first successful flotation process was operated at Broken Hill. This enabled the ores to be concentrated at the mines. The mining companies then co-operatively erected a lead smelter at Port Pirie in South Australia, the nearest sea-port and 254 miles by rail from Broken Hill, while work was begun on the erection of electrolytic zinc works at Risdon, near Hobart in Tasmania. The hydro-electric power supplies for these zinc works was drawn from Waddamana in the centre of the island. Nearly forty years had thus elapsed from the time of the discoveries of the mineral deposits until the whole range of processes converting the ore to a finished product could be carried out in the one country. Even to-day the capacity of the Australian lead and zinc smelteries is far from able to handle all the Australian output of ore ; approximately half the ore produced is still exported as concentrates.

There are to-day four main companies conducting mining operations on the Broken Hill field : North Broken Hill Ltd., Broken Hill South Ltd., The Zinc Corporation Ltd. and New Broken Hill Company Ltd. The first two of these are Australian, the two latter English. In 1939 the original mining company, Broken Hill Proprietary, ceased to operate in Broken Hill and the ore remnants in their leases are at present being extracted mainly by Broken Hill South.

The reasons why this original company discontinued its activities in this mineral field reflect the increasing complexity of mining operations and the increased demand for modern and scientific methods of working. The Broken Hill Proprietary company had worked the central part of the lode, where it outcropped, by opencast methods. They extended these workings to a depth of 300 ft. and from the main open cut worked adit mines and shafts. They mined only the better and more concentrated parts of the lode and they left their workings in poor condition when they had obtained the minerals they wanted. In many cases no timber supports were left in and very little residue sand returned as a filler to the mining tunnels. As it became more expensive to work the minerals at greater depth and in more complicated positions so the company's liabilities increased. They found it more profitable to turn their interests to the massive iron ore deposits in the Middleback Ranges of South Australia, where their experience in opencast methods of mining was an asset.

Since 1945, the increased prices of lead and zinc in world markets and the additional finds of rich silver ores in the adits and shafts of the open cut has repaid the cost to the South Mine of the many expenses and liabilities incurred when they took over the Broken Hill Proprietary leases and workings. The present companies own co-operatively the local diesel power station, from which they draw their electricity and compressed air. This is the largest station of its kind in the southern hemisphere.

The average mineral content of the ores is lead 15 to 17 per cent., zinc 12 per cent., silver $3\frac{1}{2}$ to 8 oz. per ton, and a small amount of gold. Until 1940, the silver and gold recovered from the ore paid the cost of transporting the other minerals to Port Pirie and smelting them there.

Access to the workings is by means of shafts. When mining was at shallow depths, shafts were sunk in the ore body to save expense but, with increasing depths of mining, it became necessary to sink the shafts in the country rock in the more stable ground at some short distance from the lode. Until twenty-five years ago the deepest shaft did not exceed 1,800 feet but since the magnitude of the lode has been realised all the workings have been much enlarged, and all the main shafts now exceed 3,000 feet in depth. The ore bodies are reached by tunnels driven from stations in the shafts. These stations are at vertical intervals of 100 to 150 feet and it is from these tunnels that the mining is carried out. The system is "horizontal cut and fill," usually with timber supports. Under this system each stope or working place is started from the level, the roof is mined and the ore from overhead removed. After the first slice of ore is taken out timber is set and filled with mill residue or sand and then another slice is taken from the roof. This practice is continued until special means have to be used to extract the ore immediately below the level above. The ore is sent down passes, left in the filling, to the level below, hauled to the shaft and hoisted to the surface.

Very large quantities of timber are required to support these underground workings. In the early days gum and boxwood from the Darling and locally grown mulga were used but now there is no suitable local timber. Before 1940 Oregon timber, specially shipped from the west coast of the U.S.A. was used almost exclusively by all the mining companies. Since then, owing to shipping and, later, financial difficulties Australian hardwoods, drawn from the forests of north-eastern New South Wales have replaced Oregon timber almost entirely.

The treatment of the ore is similar in all the mines. The lead sulphide and zinc sulphide occur as small particles thoroughly inter-mixed. Some of the lead particles are, after intensive crushing, separated by gravity processes but the zinc cannot be removed by this method as several of the rock minerals have specific gravities closely approximating to that of zinc sulphide. Using chemical re-agents the lead sulphide is floated off first, while a depressing agent is used to compel the zinc sulphide to remain with the gangue. The pulp is then reconditioned, further re-agents added and the zinc sulphide is floated off. The mill products are a lead concentrate with 70 per cent. lead, 5 per cent. zinc and 35 oz. silver per ton, and a zinc concentrate with 51 per cent. zinc and a little silver and lead. The worthless residue is about $\frac{1}{8}$ of the original ore. The main products are railed to Port Pirie, where the lead is produced at the smelteries which are jointly owned by the four mining companies.

The zinc concentrate from the southern part of the lode is sent to Avonmouth in England, while that from the Australian owned mines is sent to Risdon, Tasmania. This latter is usually marketed as metallic zinc and the former as oxide.

Lead, zinc and silver are not the only products. The sulphur gases from the smelteries at Port Pirie are used in the manufacture of sulphuric acid, most of which is used in the artificial fertiliser industry. The Port Pirie smelters also produce a copper matte in the course of refining the lead, most of which is shipped to Port Kembla, N.S.W., to be converted into metallic copper. The plant at Risdon, which produces metallic zinc, also has a small output of metallic cadmium.

The annual production figures are of the order of :—

Lead	160,000 tons	Sulphur	16,000 tons (as sulphuric
Zinc	120,000 tons	Cadmium	250 tons acid)
Silver	5,750,000 ozs.	Copper	1,000 tons

These totals for lead, zinc and silver production represent about 13 per cent., 8 per cent. and $3\frac{1}{2}$ per cent. of the world's output of the respective metals.

A city of 30,000 people has grown up around these four mines. In addition to the fluctuations of welfare and population characteristics of mining settlements—the 1914 population of Broken Hill was 35,000 but that of 1926 only 24,000—the isolation and the desert environment have imposed hardships on city life in the out-back but many of the drawbacks and inconveniences of the earlier days have been overcome.

The establishment of an assured water supply and the control of sand drift have been vital to the existence of the whole mining community. The importance of these two features has been long realised but it has only been during the last twenty years that active steps have been taken to provide the former and prevent the latter. Two shallow surface reservoirs, Stephen's Creek and Umberumberka, provide the water for the town and mines, while the latter also use underground supplies from the mine workings. A series of drought years 1940-1946 emphasised how precarious these supplies were. The reservoirs were filled only by rain water and the evaporation rate from them was over 80 inches per year. During periods of acute drought water trains were run daily at considerable expense between Menindee on the river Darling and Broken Hill. A pipe-line has since been constructed linking these two places and storage reservoirs have been created along the river. The pipe-line was opened in June, 1952 and already vegetable gardens have been established. Hitherto very little of the food supply has been produced locally. A few dairies were successful where the cows were fed on succulent saltbush, but most of the food has to be brought in from Adelaide.

Sand drift and dust storms had by 1936 become so severe that the actual mine workings were threatened and housing estates were being abandoned. The mining companies encouraged the establishment of a green belt around the city. Regeneration areas were created simply by fencing thousands of acres and protecting the vegetation from marauding wild animals, particularly rabbits. Citrus groves were planted and parks and recreational areas developed. In this way the dust menace was overcome.

The more recent developments connected with the mines have been responsible for new developments in the town. Modern methods of surveying and prospecting have established the existence of immense reserves of ore, of a value equal to or even higher than that which has been and is being worked. With this assurance that this isolated city is not likely to become a ghost town in the near future, as many mining centres have become once their mineral reserves have been exhausted, the mines are collaborating and encouraging new developments in the town. The greatest link between the two interests is probably the understanding and realisation that the one depends upon the other for its existence.

SIGNIFICANT PLACE-NAMES IN SCHOOL GEOGRAPHY

L. J. JAY*

A DISCUSSION on "The ideal atlas for pupils aged 11 to 16," arranged by the Secondary Schools section during the Annual Conference of the Geographical Association in January, 1952, revealed a lively interest in problems concerning place-names. Support for the complaint that many atlas maps tend to be overloaded with names was opposed by the representative of a publishing firm who declared that in his experience any attempt by the compiler to reduce the number of names in an atlas invariably evoked protests from teachers at the ensuing omissions. This viewpoint deserves sympathetic consideration, for if it is conceded that many of the maps in a school atlas are crammed with topographical names, then information ought to be made available which would assist those who compile and revise such maps to incorporate only the most important features. The problem of atlas content is in reality part of a wider question which might be posed thus: "What essential place-names in the various countries of the world ought to be made known, by virtue of some geographical significance, to pupils who are following a particular course of study?" This question is of some concern to the secondary grammar schools because of the demands made by an external examination. Nevertheless it would be a tedious task to obtain and assess the preferences of all grammar school teachers for the place-names which each considered to be most important in the geography course: the discussion mentioned above emphasised the wide divergence of opinion upon this theme amongst a small representative group, and clearly a less laborious method of inquiry is desirable.

Teachers of modern languages are familiar with the device of using word-counts to establish the commonest words in another language. For example, the *French Word Book* edited by Prof. G. Vander Beke offers a guide to the words which occur most frequently in modern written French.¹ About twenty years ago a comparative study was made of the vocabularies in thirty first-year French courses written for use in English schools. The aim of this investigation was to discover how far the vocabularies agreed with each other and with the Vander Beke list,² also to determine the words which were considered by the

* Mr. Jay is Lecturer in Education, specialising in geography, in the Department of Education, University of Sheffield. He is a member of the Secondary Schools Section Committee of the Geographical Association.

¹ Vander Beke's *French Word Book* was first published in 1929 by Macmillan in New York for the American and Canadian Committees on Modern Languages.

² H. Milton, T. V. Benn, etc. "A Study of the Vocabulary of Thirty First-Year French Courses" in *Modern Languages*, vol XIV, 1932-3, pp. 11, 43 and 140. Also F. A. Hedgecock. "Word Frequency in French" in *Modern Languages*, vol. XVII, 1935, p. 17.

SIGNIFICANT PLACE-NAMES IN SCHOOL GEOGRAPHY 29

respective authors of the courses to be important from a teaching viewpoint. This idea might be applied with advantage to establish the most significant place-names in school geography, and the following details refer to a preliminary investigation which was recently completed by the writer.

Australia and New Zealand were selected for this initial inquiry, and a comparative study was made of all the place-names of these two countries which appear in regional textbooks recommended by their respective authors or publishers for use in grammar schools. One-volume books dealing with the whole world were excluded, since these tend to condense the regional studies and therefore contain an abbreviated list of names. (Nevertheless several books of this type were subsequently analysed to discover how far their respective authors had selected the most important names.) Twenty-three textbooks and four sketch-map books were found to come within the scope of this investigation. All of these have been published, reprinted or revised during the last 20 years—i.e. since 1931—and in every case the latest available edition was consulted.³

From each book a list was compiled of all the Australian and New Zealand place-names mentioned in the text, in questions and exercises, on maps and diagrams, or in the captions to illustrations, since it was assumed that a name appearing in any guise was intended by the author to be observed because of some geographical significance which it possesses. No record was kept of the number of times that a name recurred in any book; a single reference qualified as a frequency of one, and thus the highest possible frequency of occurrence in this survey was 27. All the names were subsequently grouped into four categories ranging from high frequency names which appeared in more than three-quarters of the 27 books, to low frequency names which occurred in fewer than one quarter. The following table summarises the findings with regard to the place-names of Australia :—

Number of different books in which a name appears			Frequency category	Number of different names in each category	Percentage of total names
21 to 27 inclusive	..	..	High	41	5·8
14 to 20 inclusive	..	..	Medium-High	39	5·5
7 to 13 inclusive	..	..	Medium-Low	70	9·8
1 to 6 inclusive	..	..	Low	561	78·9
TOTAL OF DIFFERENT NAMES				711	100·0

The number of different Australian names in any one book ranges from 29 to 381, the median value (as distinct from the average) being 109. It will be observed that over three-quarters of all the place-names are of low frequency; even more striking is the fact that almost exactly one-half of the names have the *lowest possible* frequency, for 359 of them occur no more than once.

³ Details of these 27 books are given on p. 32.

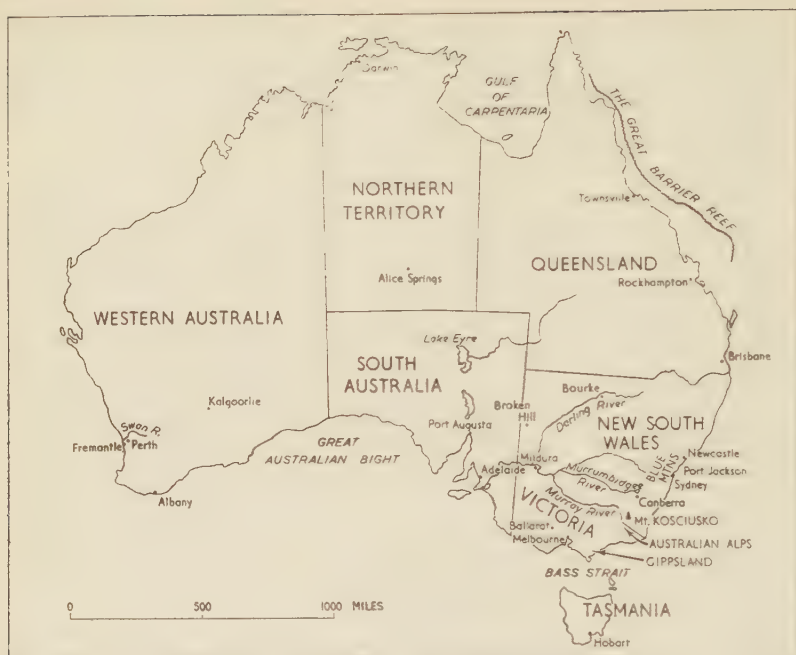


Fig. 1.—Place-names of Australia with a high frequency of occurrence.

The Australian place-names to be found in more than half of the 27 textbooks are located on Figs. 1 and 2. If these 80 names together with the 70 which have a medium-low frequency were inserted on the map of Australia in an atlas designed for use in grammar schools, the publisher would surely satisfy the majority of his potential customers and at the same time he would effect a valuable simplification of the map. Space would remain for a judicious selection of low frequency names which the compiler is reluctant to omit. If necessary, additional places might be listed in the alphabetical index at the end of the atlas, each with its latitude, longitude and map page number, without locating these places on the map. (This device, which is rarely employed by atlas publishers, would serve the double purpose of reducing the names printed on the atlas map and would offer pupils valuable practice in locating places by the use of co-ordinates.)

If it is considered desirable that pupils should know the location of all topographical names encountered during the geography course, then any place mentioned in a textbook without an adequate description of its position ought to be located on a sketch-map in the book or on a map in the pupil's atlas. But unless an author specifies the atlas to be used along with his textbook (in the manner of a crossword compiler who prescribes his dictionary) the effective combination of these two teaching aids may be impaired. One example will suffice for many; the following paragraph is taken from a textbook on Australia in a series which according to the preface is designed to meet



Fig. 2.—Place-names of Australia with a medium-high frequency of occurrence.

the requirements of the first three years' work in geography in Grammar, Technical and Modern schools:—

The atlas (which, of course, you should use whenever you read this book) shows you that on the west coast of Australia there are many places with Dutch names. Find the positions of Cape Leeuwin, Dirk Hartog Island, Cape van Diemen and Arnhem Land. Notice that there are some French names too—Geographe Bay, Cape Leveque, and Cape Bougainville, showing that French explorers also came here.

The exhortation to use an atlas in conjunction with the book is in excellent taste and a precept advised by many, but one might question the tacit assumption that all of these places can be found in a standard atlas of secondary school grade. For the location of minor place-names it is difficult to apportion the responsibility between the text-book writer and the atlas compiler, but it would appear reasonable to propose that if an author mentions features which are known to be of low frequency occurrence he should assume the responsibility for describing their position accurately in his book—either in words or on a sketch-map—rather than transfer the onus to the atlas compiler.⁴ The application of this rule should increase the benefit to be derived from the combined use of textbook and atlas. The same knowledge of the frequency rating of place-names could assist the author of a single-volume geography of the world by indicating the most important features worthy of mention in his abridged regional descriptions of the continents.

Thus in a variety of ways the grading of place-names based on a

⁴ Amongst the five places of low frequency occurrence which are mentioned in the paragraph quoted above, three appear in only one other text-book and one was not found elsewhere.

study of textbooks can be applied to problems concerned with the teaching of geography. It should be stressed, however, that this information is no more than a guide, to be used cautiously and critically. In particular the user should be alert to new developments and allow for the lapse of time which precedes the widespread acceptance of new names—for example, Woomera, in South Australia—or which follows the declining importance of old ones. If limitations such as these are recognised, the chief merit of the scheme is seen to rest upon the concise expression of collated opinion, objectively assessed, and against which the individual can measure his personal selection of the most significant place-names.

The following books were examined during 1951 in the above study of place-names:—

- L. Brooks. *New Regional Geographies. Book II—Asia and Australasia.* Univ. Lond. Press.
- L. Brooks and R. Finch. *Columbus Regional Geographies. Second Series Book I. The Southern Continents.* Univ. London Press.
- J. Bruce. *Australia and New Zealand.* Nisbet.
- C. C. Carter and H. C. Brentnall. *Man the World Over. Book I.* Blackwell.
- C. C. Carter and E. C. Marchant. *The World of Man. Book III—Continents New and Old.* Christophers.
- A. W. Coysh and M. E. Tomlinson. *Modern Geography. Book VI—The Southern Continents.* Univ. Tutorial Press.
- J. Fairgrieve and E. Young. *Human Geographies for Secondary Schools. Book III.—Euro-Asia.* Philip.
- A. Ferriday. *A Map Book of Australasia for Middle Forms.* Macmillan.
- E. C. T. Horniblow. *Lands and Life. Book V.—Asia, Africa and Australasia.* The Grant Educ. Co.
- E. D. Laborde. *Cambridge School Geographies. Book V.—The Southern Lands.* Camb. Univ. Press.
- E. V. Lane and A. M. Dell. *New Geographical Series. Asia, Australia and New Zealand.* Harrap.
- A. Mamour. *The Complete Geography Series. Asia and Australasia.* Macmillan.
- A. Murray. *A Map Note Book of Australia, New Zealand and the Pacific.* Collins.
- T. Pickles. *The Southern Continents. Book III.—Australia, New Zealand and the Pacific Islands.* Dent.
- T. Pickles. *Modern School Geographies. Africa, Australia and New Zealand.* Dent.
- T. Pickles. *Sketch-Map and Exercise Books for Upper Forms. Book VI.—The Southern Continents.* Murray.
- V. F. Searson and F. Evans. *The New Era Geographies. Book II.—Australia, Asia and Africa.* Johnston.
- P. T. Silley. *Secondary School Geographies. Australia and New Zealand.* Schofield and Sims.
- A. R. B. Simpson. *Australia and New Zealand.* Bell.
- V. C. Spary and W. A. Perkins. *The Conquest Geographies. Book V.—The Southern Lands.* McDougall's Educ. Co.
- L. D. Stamp and L. S. Suggate (editors). *Geography for To-day. Book II.—The Southern Continents.* Longmans Green and Co.
- J. H. Stembridge. *The New Oxford Geographies. Book II.—The Southern Continents.* Oxford Univ. Press.
- J. H. Stembridge. *The New World Wide Geographies. Second Series. Book II.—Africa, Asia and Australasia.* Oxford Univ. Press.
- C. B. Thurston. *A Progressive Geography. Book II.—Africa and Australasia.* Arnold.
- R. M. Weaver. *Living Geography. Australia, New Zealand and Oceania.* The Gregg Publishing Co.
- W. J. Wheeler. *Modern Geographies. Book III.—Australia and New Zealand.* Murray.
- S. J. B. Whybrow. *Australia and New Zealand. A Geography Note Book.* Dent.

CORRESPONDENCE

SOUNDING MOUNTAIN LAKES

Surely the method used by Messrs. Howe and Yates in sounding Llyn Cau is unnecessarily complicated? A method saving both time and labour and forfeiting nothing in the way of accuracy is:

- (1) to plot the positions at which soundings are to be taken on one plane table: this can be quite arbitrary, but normally positions will mostly be along straight lines along which the boat can be paddled;
- (2) to set up the plane table so that rays from it give good inter-sections on a proposed line of soundings;
- (3) as the boat follows each line the alidade is pre-fixed on each point in turn; and
- (4) the plane tabler blows a whistle when the boat crosses the sights and the sounding is taken.

Only four men are needed: two in the boat (one to paddle and one to sound), one on the shore to guide the boat, and one on the plane table. All the work is thus done on the spot on one plane table sheet.

This is a method which has been widely used in this country, and has the advantage that it can easily be taught to boys with no previous surveying experience. The Brathay Exploration Group, using boys drawn mainly from industry, has now almost completed sounding the twenty previously uncharted Lake District tarns by this method. Llyn Bochlwyd in Snowdonia has been sounded by Senior Scouts of Perse School, Cambridge, and Rover Scouts from King's College, Taunton, have sounded Lochs Einich and Avon in the Cairngorms in the same way. The maps of these lakes will shortly be deposited in the Map Room of the Royal Geographical Society.

*Woodcroft, Moor Park,
Northwood, Middlesex.*

J. B. SEATON.

THE COMMONWEALTH IN THE GEOGRAPHY SYLLABUS

Dr. Howarth's good-humoured exhortation to geographers to give more time to the British Commonwealth should be heeded. If we had learnt more about "the slums of Empire" it is possible that such a situation as we now have in British Guiana would not have arisen: but surely Dr. Howarth is wanting the right thing for the wrong reasons. An increased awareness of our responsibilities as citizens of the British Commonwealth is one thing; to assert that the Commonwealth should take precedence in our syllabus over the rest of the world, on which the time should be cut down, if necessary, is another. It is politically dangerous and morally objectionable to emphasise that training for citizenship of the Commonwealth should take precedence over training for citizenship of the world.

Does Dr. Howarth wish to foster the pre-war attitude of mind when a British Prime Minister could dismiss Czechoslovakia as a country few of us knew anything about? Why should we be more concerned about Canada than Latin America? Why should we consider India's

hungry millions as being of comparatively little importance, if India decided to leave the Commonwealth? Is the consideration we give to the Union of South Africa to be determined by Dr. Malan's wish to remain in or outside the Commonwealth? Such a principle of selection is sentimental and ignores the fact that the world is one, and we are members one of another, Chinese, Arabs or Englishmen, whether we like it or not. It is morally objectionable because it substitutes a lesser loyalty for the larger loyalty.

*The Grammar School,
Chipping Sodbury.*

J. W. HANMER.

THE LE PLAY SOCIETY

(A non-profit making organisation for the promotion of studies in History, Geography, Sociology and Economics).

President : SIR E. JOHN RUSSELL, O.B.E., D.Sc., F.R.S.

THE 1954 PROGRAMME INCLUDES :

EASTER : A visit to Rome, April 8th to 22nd.

WHITSUN : Isle-of-Man, June 4th to 11th.

AUGUST : Swedish Lapland and Stockholm, August 10th to 28th.

Roman Provence, August 15th to 29th.

Doorn, Holland, August 13th to 28th

Leader : Professor S. H. Beaver, M.A.

This course is for University students and post-graduates.

For details write to Miss Margaret E. Tatton, Director, The Birlings, Birling Gap, near Eastbourne. Telephone : East Dean (Eastbourne) 2208.



SCHOOL LIBRARY ASSOCIATION

President: Professor W. O. LESTER SMITH

C. B. E., *University of London.*

Advantages of Membership

Information Service and Advice

'The School Librarian and School Library

Review (termly journal : free to S.L.A. members). 'A quite admirable journal' writes DR. ARUNDELL ESDAILE, C.B.E.

Leaflets on Special Problems :

1. *School Libraries in Library Class-rooms*; 2. *Basic Stock*; 3. *Using the Library in the Work of the School*; 4. *Building a Secondary Modern School Library*; 5. *Reference Work in the Secondary Modern School*; 6. *Notes on Classification for Secondary Modern School Libraries*; 7. *First Steps in Administration for School Librarians.*

Other publications at reduced prices :

School Libraries: a Short Manual by C. A. STOTT, M.B.E.; *List of General Reference Books and of Books on Librarianship* (new edition ready shortly); *School Libraries To-day: New edition*, with a Foreword by Professor W. O. LESTER SMITH, C.B.E.; *Eleven to Fifteen: A Basic Book List of Non-Fiction for Secondary School Libraries*, with a Foreword by RONALD GOULD, M.A. (2nd edition).

Subject book lists on *Farming, Scripture, Citizenship and Scotland.*

Full details on request.

Annual subscription: £1 1s.

Write now, without obligation, to the HON. SECRETARY, S.L.A. (Ref. G/3), GORDON HOUSE, 29 GORDON SQUARE, BLOOMSBURY, LONDON, W.C.1.

THIS CHANGING WORLD

EDITED BY L. S. SUGGATE

THIS paragraph inaugurates a new feature of our Journal. Under this title it is intended to include in each issue some half dozen pages, or possibly more if the feature is both well-supported by authors and well-received by readers, in which up-to-date, authoritative, factual information is given about new developments and changes of geographical significance at home and overseas. As will be seen from the pages that follow the information will be given in the form of shorter or longer notes, maps or statistics, and it is hoped that it will supplement in a really helpful way the material ordinarily available or accessible to the busy teacher. In order that it should be authoritative we have sought the co-operation of the man on the spot, the man with special knowledge and the man with access to special sources of information. We have, in fact, requested help from a considerable number of geographers in Britain and the Commonwealth and propose to ask still more. Some of them are in Ministries at home, or Government agencies and departments abroad; most of them are attached to University institutions. It is pleasant to record that our request has met with an immediate and generous response, and to all who have expressed their interest and willingness to co-operate or who have actually furnished material we offer our sincerest thanks. Indeed, to some we must tender apologies for our inability to find room in this issue for the interesting material they had so kindly sent, and to others for a measure of editorial pruning or for the omission of all but the most necessary bibliographical references.

Each contribution to "This Changing World" will appear over the name and address of the correspondent who furnished it, but the considerable work of editing this material and preparing the feature as a whole has been very kindly undertaken by Mr. L. S. Suggate. To him my own thanks are specially due. His labours will make possible the realisation of something I have long desired and believed desirable but lacked the means to achieve. Under his hands, I expect to see "This Changing World" grow into one of the most interesting, valued and helpful features of *Geography*, and to my warmest thanks I add my sincere good wishes.

DAVID L. LINTON.

GERMAN SEA FISHING

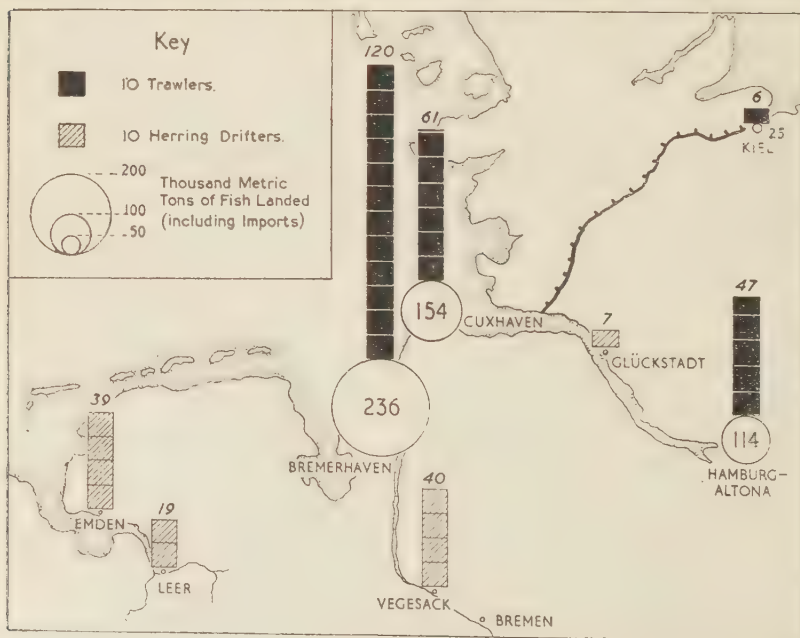
In the German diet, fish provides about 10 per cent. of the total protein foodstuffs and helps to overcome the shortage of fats. The most important contributor in this latter field used to be whaling but under the occupation statute Germany is not permitted to possess whaling vessels. Considering the loss of the largely agricultural eastern provinces and the dissociation of the Soviet zone from the German Federal Republic, the contribution that fish must make to the national table is now greater than ever. The post-war recovery of German sea fishing (illustrated by the table below) should be seen in this light. The recovery is remarkable when it is considered that in 1945 a fresh start had to be made since, of the pre-war fishing fleet of 403 trawlers and 170 herring drifters, only 37 and 40 respectively were then available. In 1952, the fleet comprised 234 trawlers and 107 herring drifters. A positive result of this need to start afresh is that Germany's fishing fleet is now the most up-to-date in the world, as

illustrated by the fact that it lands as large a catch as the more numerous pre-war fleet.

GERMAN SEA FISHING : TOTAL CATCH	
	metric tons
1936 (a representative pre-war year)	603,000
1946	186,000
1947	280,000
1948	380,200
1949	471,380
1950	525,480
1951	647,500
1952	637,820

The catch of 1950 is selected for analysis to show the relative importance of the different branches of fishing and the fishing grounds. The total catch was obtained as follows : trawlers, 71 per cent. of the tonnage landed ; herring drifters, 9 per cent. ; small craft (cutters) and coastal fishing, 20 per cent. The leading role of trawler fishing emerges quite distinctly. Nevertheless, the amount contributed by small craft and coastal fishing is remarkable, being even more important than the figures indicate since it includes a greater proportion of higher-priced fish (plaice, etc.). Fishing by drifters is handicapped by being a strictly seasonal occupation, and for this reason it becomes increasingly difficult to obtain the necessary crews.

The total catch came from the following fishing grounds : North Sea, 52 per cent. of the tonnage landed ; Iceland, 24 per cent. ; Norwegian coast, 11 per cent. ; Baltic Sea, 8 per cent. ; others, especially Barents Sea, and mixed voyages, 5 per cent. The North Sea figure includes the total catch of herring drifters and 60 per cent. of the catch of small craft, while that for the Baltic Sea includes 40 per cent. of the catch of small craft. The North Sea emerges as the most important fishing ground.



Fishing Ports of the Federal German Republic, 1951.

Nevertheless, the fishing grounds off the coasts of Iceland and Norway combined are the source of a third of the total catch and the fishing restrictions resulting from the new definition of their territorial waters are as serious for Germany as they are for the United Kingdom. Alternative fishing grounds have to be found and successful attempts to that end were made in 1952 off the Greenland coast.

Germany possesses four home ports for trawlers, Bremerhaven, Cuxhaven, Hamburg-Altona and Kiel; of these Bremerhaven leads by far, being among the leading fishing ports of Europe and ranking about the same as Grimsby. The smallest one, Kiel, is also the newest, the harbour installations for the fishing vessels having been built in 1948 on the site of a dismantled ship-yard. The home ports for drifters are Emden and Leer on the Ems estuary, Vegesack on the Weser and Glückstadt on the Elbe. In contrast with the trawler-ports, the number of drifters registered at the drifter-ports mentioned has increased as a result of using only four instead of seven ports as before the war. The importance of these ports, according to the amount of fish landed, is however still small in comparison with that of the home ports of the trawlers. (See H. Knübel, "Der Deutsche Seefischfang nach den Kriege," *Geographische Rundschau*, 5, 1953, 25-28).

University College, London.

DR. K. A. SINNHUBER.

MALARIA

SOME IMPLICATIONS OF RECENT REVOLUTIONARY PROGRESS

The application to anti-malaria campaigns of the so-called "residual" insecticides such as D.D.T. may well prove to be a turning-point in human history. One application of such an insecticide may banish mosquitoes (and other insects) from a house for a period up to twelve months; this long-continued effect is of great significance, for if as often a "domesticated" or house-haunting species of mosquito is the chief vector of malaria in a certain area, then the disease can now for the first time be eliminated from all settled areas at small cost. And this can be done with very little effort or even much co-operation from the people. Operations out-of-doors, in breeding-places or against "wild" species, can be very effective but are naturally more difficult and more transient in their effects.

It is well known that the body of the human host is invaded by parasites of various kinds, e.g. viruses, bacteria and worms, some of which are harmful or pathogenic, and some harmless or non-pathogenic. Such relationships may also be expressed in zoological terms as either imperfect adjustment between parasite and host (pathogenic), or a state of more perfect adjustment (non-pathogenic) in which parasite and host are "living on terms." In applying these concepts to malaria, one can distinguish some areas which normally have little malaria, but which are subject to devastating epidemics in occasional years of climatic conditions exceptionally favourable to the mosquito and suitable also to the malarial protozoa; in such years the population is mainly susceptible to the disease, adjustment is poor, pathogenicity is marked, and much illness and many deaths result in all age-groups. Other areas, however, have endemic malaria; climatic conditions constantly favour the malaria-carrying mosquito and the protozoa; there is constant severe incidence, rather than occasional severe epidemics and people develop a greater or less degree of tolerance for malaria, or even immunity against it. A very intense degree of endemicity, termed hyper-endemicity or recently holo-endemicity, is found in the humid tropical lowlands or low plateaux of South America, West and Central Africa, the East Indies and parts of India, where the state of adjustment between the parasites and adult and long-settled inhabitants is less imperfect than elsewhere, and recurrent attacks are felt rather as slight indisposition than as severe illness. But this state is

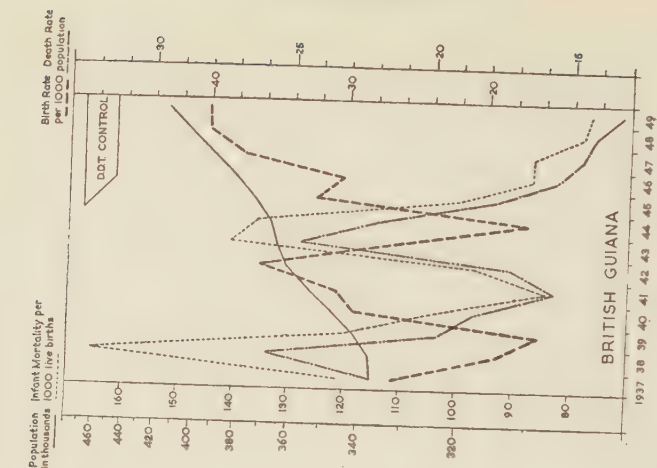


Fig. 1

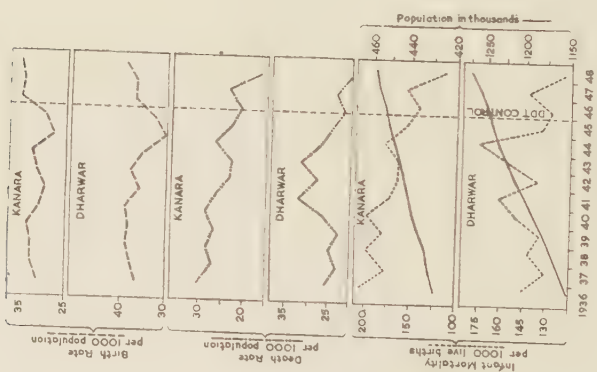


Fig. 2

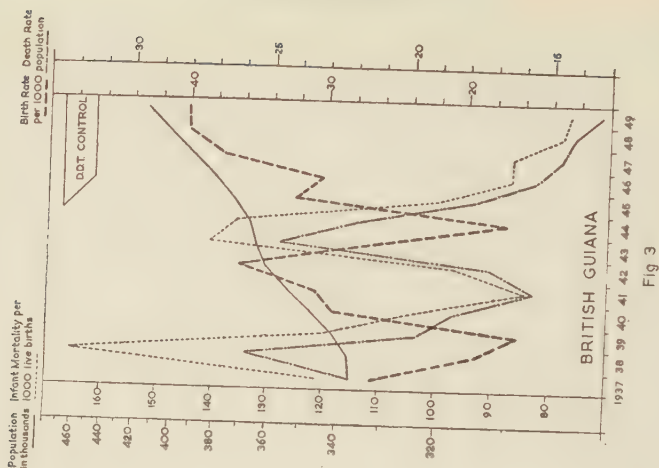


Fig. 3

attained only in those who survive to adult life after repeated severe attacks of malaria in early childhood which account for much of the high mortality among young children. The efficiency of the adult of working age may be diminished, but he is not actually kept off work by crippling attacks; in the case of school children authorities disagree, since in some areas it is maintained that malaria is no worse a drag on education than is the common cold in Britain, whereas elsewhere it is held that no real progress in education is likely until malaria is virtually abolished.

Recent years have seen much controversy concerning the use of these insecticides, particularly in the hyper-endemic areas. This centres on the speed and priority of application of anti-malaria campaigns, as against other measures designed to improve the standard of material living. Since the meeting of the Expert Committee on Malaria of the World Health Organisation at Kampala in Uganda in December, 1950, the agreed policy is to go ahead with anti-malaria campaigns. This has reduced but not entirely eliminated the controversy. All are agreed that these anti-malaria measures can not be withheld, and also that other measures to improve living standards will be necessary. Doubts and warnings continue to be expressed on several grounds.

Firstly, the outlawing of malaria from settled areas subject to holo-endemic conditions will increase susceptibility; so that any attacks that do occur after the campaigns will tend to be much more crippling to adults, possibly including malignant forms such as blackwater fever. Thus partial control may prove a social evil in that adults in their working years, bread-winners and mothers of young families, may be more subject to severe illness, although freed from the constant drag on efficiency of the endemic form of the disease.

Again, the demographic effects of the anti-malarial campaign will include a sharp rise, which may sometimes be explosive, in the rate of increase of population. Some think that the improved health and working output of the people, along with other measures of improvement, will allow present standards of living to be maintained or improved. Others fear that the rise in the rate of increase may exceed that of food resources and that for the constant pressure of malaria may be substituted other evils, such as malnutrition. The suggestion is that anti-malaria measures must be accompanied by an integrated scheme of improvement advancing in pace as the need for it is felt by the people rather than imposed from above.

Food for further thought may be found in the accompanying graphs. Fig. 1 shows the dramatic increase in the rate of population growth in Ceylon since the nation-wide anti-malaria campaigns. The increase is due to some increase in birth-rates, very marked in some areas, and to sharp decreases in the death-rate, including infant mortality, and in still-births (often caused by malaria in pregnant women). Even the massive efforts in the reclamation for agriculture of the abandoned irrigation areas in the formerly malarious Dry Zone can cope with only a fraction of the increase. Ceylon has relatively high standards of living and of education, but even so a slowing down of the rate of population growth cannot be expected soon. And already there are disquieting signs of instability of health, and of malnutrition, in younger age-groups.

Fig. 2 shows graphs for two Districts of Bombay State—Kanara, which is largely a holo-endemic area, and Dharwar, which is mostly subject to epidemic malaria. The most malarious areas in Kanara were actually decreasing in population prior to the campaign, and the increases are most marked there; it seems clear that apart from the still-births prevented, there is an actual increase in fertility—at least for a time—when malaria is abolished. In the two Districts as a whole, birth rates are increased, but so far at least death rates and infant mortality rates are not much reduced. Even so the rate of population increase has risen markedly. Plague has been virtually abolished as a by-product of the campaign. An

improvement in the output of work has been noted, and fresh clearing of forest for agriculture has been undertaken.

A very widespread campaign has been undertaken in British Guiana since 1945, and some results are shown in Fig. 3. An exceptional drought in 1939 caused temporary trends similar to those seen since 1945. The birth rate has risen, the infant mortality rate has fallen because of reduced incidence of premature births and congenital debility caused by malaria in the expectant mothers; maternal mortality has fallen because of the reduction in anaemia of pregnancy. The rate of natural increase is now comparable with that of Ceylon, about 3 per cent. per annum.

It is impossible to quote a full bibliography, but the interested reader can quite easily and quickly get up-to-date information and ideas in this field by referring to the post-war volumes of *The Bulletin of Hygiene* and *The Bulletin of Tropical Diseases* which contain précis of papers in many languages. The *Bulletins* are indexed by subject and by author. Prominent workers in the post-war years include T. H. Davey, G. M. Findlay, P. C. C. Garnham, G. Giglioli, G. Macdonald, B. G. Maegraith, N. H. Swellengrebel and D. K. Viswanathan.

University of Liverpool.

A. T. A. LEARMONTH.

IRON ORE DEVELOPMENT IN VENEZUELAN GUIANA

One of the most important economic developments taking place in Latin America to-day is that of mineral exploitation in the Caroní river basin of Venezuela. As a result, this republic, which is already famous as the world's greatest exporter of petroleum, promises to become also the most important source of iron ore for export in the New World. Moreover, the developments are making the Guiana plateau and the lower Orinoco valley significant constituents of the economic geography of Venezuela for the first time since Spanish colonial days.

It has long been known that the northern flank of the old Guiana massif, both to the east and the west of the lower Caroní, was rich in iron ore, but it is only in the last decade that the rapid depletion of high grade iron ore resources in the United States has led to the active exploitation of the Venezuelan deposits. Although several other areas are scheduled for future development two ore bodies are now being worked.

The first at El Pao, 36 miles south of the Caroní-Orinoco confluence, is a concession of the Iron Mines Company of Venezuela, a subsidiary of the Bethlehem Steel Company. Mining operations began there in August, 1950, and the 63 per cent. iron-content haematite is being mined by open pit methods. After crushing, this is loaded into 70-ton trucks and transported by a railway constructed for this purpose to the new port of Palúa on the Orinoco, $2\frac{1}{2}$ miles west of the old village of San Félix.

This storage point, capable of holding 850,000 tons of ore, is equipped with the most modern and elaborate methods of loading to overcome the 43-foot seasonal range in the water level of the Orinoco. Large 4,500-ton river barges and 8,500-ton capacity river vessels then transport the ore from Palúa to a tidewater port constructed on the south side of the Paria peninsula, and aptly named Puerto de Hierro (Iron Port). The barges, operating only during the season of high water, are towed by 1,300 h.p. ocean-going tugs via the Manamo channel across the Gulf of Paria to Puerto de Hierro, while the deeper draught river vessels use the longer route via the main channel (Boca Grande) of the Orinoco, returning empty to Palúa during the season of high water by the Manamo route.

From Puerto de Hierro, 26,000-ton ocean carriers take the ore to the Bethlehem Steel Company's works at Sparrows Point, near Baltimore, Maryland. The first shipment was made in March, 1951, and by the end of that year 1.4 million tons had been mined, and 720,000 tons exported. The corresponding figures for the year 1953 were 2.2 million tons mined



and 1.8 million tons exported, and it is intended that future output from this source shall average 3 million tons annually.

The second and parallel development is taking place west of the Caroní, 50 miles south of Ciudad Bolívar, at Cerro Bolívar. Like El Pao, this is another great iron hill rising several hundred feet above the surrounding country, and containing some 500,000,000 tons of proved reserves of high grade ore, practically free of sulphur, and of similar iron content to that of El Pao. The development of this concession of the Orinoco Mining Company, a subsidiary of the U.S. Steel Corporation, which is spending 300 million dollars developing the area, closely resembles that taking place east of the river. A railway, 90 miles in length, to a new river terminal, Puerto Ordaz, on the west side of the Caroní-Orinoco confluence, provides the first stage in the export of the ore. Instead of the Venezuelan Iron Mines Company's intermediate stage of river transport to Puerto de Hierro, the Orinoco Mining Company's ore will go direct by ocean-going vessels from Puerto Ordaz to the U.S. Steel Corporation's new Fairless plant at Morrisville, Pennsylvania (and some to Gulf ports for Birmingham, Alabama). To make this possible, 180 miles of the Orinoco downstream from Puerto Ordaz and its tributary the Macarao channel have been dredged to provide a channel 200 feet wide with a minimum depth of

24 feet. In addition, a new steel dock, one fifth of a mile long, has been towed in sections to Puerto Ordaz. Both these operations were completed at the end of 1953, and the first shipments of ore will be made early in 1954. When in full operation it is planned that production will reach 15 million tons annually.

Apart from the provision of equipment to mine and transport the ore, and to overcome the difficulties of the great seasonal range of the Orinoco and the forested nature of the terrain, these two great economic developments have involved the construction of power stations, housing settlements, water supplies, airfields, roads and aids to river navigation. Many Venezuelans, previously employed on construction work, have settled in the area, clearing land along the railways and roads and producing fruits and vegetables for their own needs and for the newly-created settlements. Ciudad Bolívar, likewise, previously a town of declining importance, has shared in the economic expansion resulting from the infusion of capital into this hitherto economically stagnant part of Latin America.

University of Birmingham.

DR. GILBERT J. BUTLAND.

AUSTRALIA'S SNOWY MOUNTAINS PROJECT

Until recently, little attention has been paid in Australia to the very considerable water-power resources of the eastern mountains, and particularly of the Australian Alps. Although the highest point (Mt. Kosciusko) is only 7,316 ft., and predominant relief is that of mature though deeply dissected plateaux, the mountains of southeast Australia carry snow for a great part of the year. As recently as 1947 it was estimated that Australia's water-power potential—including Tasmania—was only 3 million kilowatts. Now it is known that the Snowy Scheme alone could exceed this figure.

In 1948, a detailed report on the Snowy Mountains was completed, and it was realised that this one comprehensive project could rival T.V.A. as one of the world's largest dual-purpose enterprises. As in the case of T.V.A., the Scheme will supply both electric power and water for irrigation. However, unlike T.V.A., most of the water will not be used in the normal stream valleys, but will be diverted inland by means of tunnels through the heart of the ranges. Instead of going to waste in the sea via the high rainfall areas of the narrow eastern coastal plains, it will supplement the westward-flowing Murray and Murrumbidgee rivers, which traverse land eminently suitable for irrigation development.

On completion, perhaps by about 1985, the Scheme as now planned will generate about 3 million kilowatts of firm power, which is the equivalent of about 4 million tons of black coal a year. The water made available each year will approach 2 million acre feet, which has been estimated as sufficient to supply some 5,000 new irrigation farms, and to boost food production by an estimated £A25 million a year on present prices.

The States of New South Wales and Victoria are both vitally concerned with the benefits of the Scheme. However, if left entirely to the States to carry out as a joint project, it was likely that there would be lengthy inter-State negotiations, and possibly serious disagreement. The Commonwealth, therefore, after achieving general agreement with the States, decided to proceed with the necessary works on its own initiative under Defence powers. Work on the project commenced in 1949.

Both water and power will be made available progressively as various stages of the Scheme are completed. For example, it is planned to generate 60,000 kilowatts of power by the end of 1954, and an additional 600,000 kilowatts in several stages between 1957 and 1962. Thereafter, successive blocks of power will be made available periodically to give the full 3 million kilowatts at the completion of the Scheme. It is intended that the power shall be used in conjunction with thermal stations which supply the New south Wales and Victorian grids, and will be used primarily for peak load

purposes. It has been suggested that the capital and operational costs of the Scheme will be met from sales of power alone, and it is estimated that power costs will be considerably less than those for comparable thermal generation.

Additional water will also be made available in stages, until by the time the Scheme is complete 1,020,000 acre feet will go annually to the Murrumbidgee, and 798,000 to the Murray. The additional water made available each year for irrigation from the Murrumbidgee will be nearly five times that at present diverted, and from the Murray, more than twice. Not all this water will in fact be available for application to the land; however, it may be assumed that irrigation development from the Murrumbidgee could be more than doubled, while irrigation from the Murray could be expanded by at least 50 per cent.



The word "dam" is used in its Australian (and Yorkshire) sense of the contained water as well as the containing wall. Only main installations are shown.

Technical aspects of the Scheme can be considered briefly in two inter-related but physically separate developments. One of these comprises a diversion of the Snowy River to Swampy Plains River (a tributary of the Murray). The other involves the diversion of the Eucumbene (a tributary of the Snowy), the Tooma (in the Murray catchment) and the upper Murrumbidgee into the Tumut River, which itself flows into the Murrumbidgee. The generation of power from this second development depends principally on the rapid fall of the Tumut River.

Highlights of the Scheme include the construction of seven major dams, 16 power stations (many of them underground), 86 miles of large-diameter tunnels through the mountains, 500 miles of race lines, and many miles of access roads in country of extremely rugged topography. The capital cost of the entire project is expected to be between £A400 and £A500 million.

Since work commenced, a large part of the general planning and design has been completed and large quantities of construction plant and engineering stores have been procured and put to use; nearly 100 miles of new access roads, mostly in difficult mountain terrain, have been constructed; a completely new headquarters town with extensive workshops and stores facilities has been established near Cooma, at the foot of the Snowy Mountains; work has commenced on new regional townships at Jindabyne (on the Snowy River) and Cabramurra (on the upper Tumut); and large camps and workshop facilities have been established elsewhere.

Construction of the first stage of the Scheme is well advanced. This involves a dam at Guthega on the upper Snowy, and a tunnel through the mountains to a power station which is expected to produce 60,000 kilowatts by late 1954. Elsewhere diamond drilling and other preliminary work on several of the major tunnels and dams has been completed, and tenders have been called for the major constructional work.

Over 1,000 professional officers and 2,200 day labourers are now working for the Snowy Mountains Authority, as well as large and rapidly growing numbers employed by private contractors.

*Australian National University,
Canberra.*

T. LANGFORD-SMITH.

RICE PRODUCTION AND RICE TRADE IN MONSOON ASIA

At the special Rice Meeting convened at Bangkok in 1952 by the Food and Agriculture Organisation of the United Nations a broad survey of world rice supplies was made. In contrast with wheat and several other important commodities rice production and trade have shown little recovery from war conditions. Though the rice area had increased by 1951 in Monsoon Asia as a whole by about 6 per cent. over the pre-war average, production was down by 4 per cent., particularly through poor unit-yields in India and Pakistan. In Monsoon Asia, while the fall in production of paddy (rough rice) was about $4\frac{1}{2}$ million tons, the almost identical figure for the fall in rice exports is more than proportionate, since it represents milled rice. Internal consumption in Thailand, Burma and Indochina, the three major pre-war exporters, would appear to have increased, especially in the first-named. Korea, formerly one of the larger exporters, whose pre-war surplus was absorbed by Japan, had, even before the Korean war, practically disappeared from the export trade. When war and other disturbances in these countries cease it will be seen more clearly how far they will respond to the demands of the deficit countries—principally India, Japan, Malaya, Ceylon, Indonesia, the Philippines—by returning to the former pattern of trade.

Meantime, Thailand, whose producers have increased their area and production by two-thirds, has succeeded Burma as the world's leading exporter of rice, and, like Burma before the war, now accounts for one-third of the world export total. Its increase of 224,000 metric tons in 1951 over pre-war export, however, does little to fill the gap left by the drop of 1,745,000 tons from Burma, that of 987,000 tons from Indochina and the disappearance of Korea's pre-war export of 1,158,000 tons. Amongst the secondary producers of rice notable increases in export have been made by the United States, Egypt and Brazil.

Meanwhile there has been an increase of 4 million tons or more in Asia's imports of other grains, such as wheat, maize, barley, sorghum and millet. This is especially notable in India, Pakistan, Japan and Ceylon. The F.A.O. considers that rice and other grains are now more interchangeable. On this point, however, it would seem necessary to have further regional evidence within these countries. Amongst the principal importing countries Indonesia, the Philippines and Cuba have increased their imports of rice. The rice-deficit countries continue, of course, their endeavour to reduce dependence on imported rice. Undermilling is being practiced in

most deficit countries. "Programmes are under way in almost every country to increase production through improved seeds, application of fertilizers, pest and disease control, provision of irrigation facilities and flood control and introduction of new cultural practices." In addition to these agronomic measures much work has to be done in providing credits, settlement and resettlement of new or restored rice areas, restoration and extension of rice-milling capacity. The Five-year Plan of India, in operation since 1951, has set a target of 4 million additional tons. Burma, Ceylon, Malaya, Pakistan and Thailand together aim at another 4 million tons by 1956-57. F.A.O., however, considers that exportable surpluses will not overtake import demands for ten to fifteen years.

University of Edinburgh.

DR. C. J. ROBERTSON.

POPULATION CENSUS IN NIGERIA

In population, Nigeria, with the part of the Cameroons under United Kingdom trusteeship, ranks fourth in the Commonwealth—after India, Pakistan and the United Kingdom: and its area, 372,674 square miles, makes it four times the size of Great Britain. Thus the very desirable assessment of its natural and human resources presents especially great problems of organisation and administration. Recently, attempts have been made to count the population more accurately than ever before.

Counting a largely illiterate population that numbered nearly 20 millions even at the last census (1931) must take a long time. It was not considered practicable to take the census on the same day throughout the country. The people of Lagos, the capital, were counted in 1950: they numbered 230,000. The Northern Region held its census in July, 1952; the Western Region in December, 1952; and the Eastern Region between April and June, 1953. Preliminary results for all but the last Region are now available, and after the data for the East have been issued it will be possible to map the figures on the basis of provinces and divisions, and to appreciate some of the features of the distribution of population.

Meanwhile the specimen statistics for two of the Regions that are given below are of considerable interest:

Below are of considerable interest					<i>Total Population</i>	<i>Percentage Increase</i>
NORTHERN REGION						
1921 (census)	..	..	..	..	10,260,000	—
1931 (census)	..	..	..	..	11,435,000	11·4
1941 (estimate)	..	..	..	..	12,238,000	7·0
1951 (estimate)	..	..	..	..	14,010,000	14·5
1952 (census)	..	..	..	..	16,838,000	20·2
WESTERN REGION						
1931 (census)	..	..	..	..	3,803,000	—
1951 (estimate)	..	..	..	..	4,680,000	23·0
1952 (census)	..	..	..	..	6,362,000	36·0

In each Region the very great increase between the censuses of 1931 and 1952 will be noted: this in fact was already widely realised and it was known that only a small part of the increase could be attributed to more efficient census taking. The most striking feature shown by these figures is the large under-estimation of population in as recent a year as 1951. If the under-estimate in the Eastern Region is of the same order as that of the Northern and Western Regions (20·2 and 36·0 per cent. respectively), the total for the whole of Nigeria will be about 31 millions—or between 11 and 12 millions more than in 1931. A similar discrepancy between inter-censal estimates and census figures was found in the British East African territories (Kenya, Uganda and Tanganyika Territory) where the 1948 census showed that previous estimates were too low by about 20 per cent.

With the completion of the Nigerian census, over 90 per cent of the population of British colonial territories have been counted since the war. As the total for all these territories is estimated to be about 74 millions, two out of every five of the colonial peoples are natives of Nigeria.

School of Geography, Oxford.

R. W. STEEL

SLUMP IN GAMBIA

The present slump in the Gambia arises out of a one-sided economy which is dependent to the extent of about 96 per cent. upon a single export crop—ground nuts. A lack of confidence has been engendered by the lower price paid to ground nut farmers last trading season (1952–3) by the Gambia Oilseeds Marketing Board, and has resulted in a pronounced depression of demand for consumer goods. There are hopes, however, that this dependence upon one product, which has lasted for over a century, may soon be a thing of the past, for deposits of ilmenite have now been confirmed at Sanyang, 30 miles from Bathurst. (Their location can readily be appreciated by reference to the map which illustrated Dr. Jarrett's article on Bathurst in *Geography*, vol. 36, 1951, p. 99: they are situated in the "waist" of South Kombo). If the deposits prove to be of sufficient extent, the Gambia will soon have a second important export which will give much-needed support to the economy of this small British enclave.

Fourah Bay College,

DR. H. R. JARRETT.

Freetown, Sierra Leone.

RHODESIAN TRADE ROUTES

Southern Rhodesian imports and exports in 1952 reached the record figures of £88·2 million and £54·6 million respectively. Traffic used the following routes (all figures in £Million):—

	<i>Southern Route</i> ¹		<i>Other Routes</i> ²	
	1950	1952	1950	1952
<i>Imports from :—</i>				
S. Africa and Bechuanaland ..	18·8	25·7 ³	0·1	0·7
Northern Rhodesia	—	—	1·5	1·8
Other Countries	20·0	31·5	18·4	28·5 ⁴
<i>Exports to :—</i>				
S. Africa and Bechuanaland ..	6·3	8·0	—	—
Northern Rhodesia	—	—	7·5	12·3
Other Countries	8·6 ⁵	1·9 ⁶	26·7	32·2 ⁷

¹ The railway from the Union via Mafeking and Bulawayo, also the road, now being tarred, from Beitbridge railhead to Bulawayo.

² Beira and the rail route to Northern Rhodesia.

³ Mainly products of Union secondary industry, but some steel, cement, etc. Rhodesia is the main market for Union industrial exports. In tonnage, since 1951 traffic by this route originating in the Union has exceeded transit traffic from the ports.

⁴ Congestion in Beira since 1950 has led to the diversion of much traffic via Union ports, causing congestion there also, because of the inability of the railway to carry the traffic.

⁵ Including gold bullion.

⁶ Excluding gold bullion (no figures).

⁷ Almost all mineral exports from both Northern and Southern Rhodesia pass through Beira.

In consequence of congestion on all routes, a new line is being built to Lourenço Marques. When completed in 1955, it will relieve pressure on Beira and abstract trade from Port Elizabeth (now the second port for Rhodesia), leaving the southern route free for a growing trade with the Union. (Details from mainly official sources).

University of Natal, Durban.

DR. H. C. BROOKFIELD.

GEOGRAPHICAL ASSOCIATION

ANNUAL REPORT, 1953

AS the Diamond Jubilee year draws to a close we look back on a year of solid achievement in many fields and some noteworthy new developments in our activities. Our record of progress, however, is tempered by our deep sense of sorrow in the loss that we have sustained by the death of our former Chairman of Council, Mr. James Fairgrieve, in his eighty-fourth year. He was a devoted friend of the Association. We have lost also two other members of some distinction: Sir Charles Arden-Close, who was President in 1927, and Mr. L. B. Cundall who was an ardent worker for improving international relations amongst teachers of geography and a keen supporter of branch activities in the Association.

Despite the ever pressing difficulties of the times, our affairs during the year have prospered, largely helped by the diligent care and able direction afforded by our President, during his year of office. We owe to Dr. Howarth our very warm thanks.

He has succeeded in office by Professor Wooldridge, to whom we extend a very cordial welcome both as a university teacher held in the highest esteem, and as an ardent field worker. His keen interest in the work of the Association is already a matter of personal experience to countless numbers of our members through his research, his teaching, and his conduct of field classes.

The Association, through the efforts in the first instance of the executive committee has embarked on two important new ventures since the last Annual General Meeting. The first is the formation of a new section for Further Education in Geography (i.e. in Technical and Commercial Colleges and Institutions). This section completes the Association's supervision through special committees and group membership of the teaching of geography in every type of recognised educational institutions apart from universities (which are served by the Institute of British Geographers). The new section has a diverse field of interests of external examination boards, and of types of institutions to serve, and it is hoped to improve the status of geography in this somewhat ill-defined educational field. We are very grateful to Mr. Wallace, lecturer at the L.C.C. Training College for Technical Teachers, and to his committee, for the invaluable pioneer efforts for the improvement of the subject that are being made through their services in this sphere of work.

The second new development that has been engaging the attention of your officers is concerned with the problems of those who are called upon to teach geography but have in fact received little or no training in the subject (e.g. amongst the staff in some secondary modern schools). We have circularised all Local Education Authorities, Institutes of Education and University Education Departments and we have received strong support and sympathy from them for a proposed series of short courses (some of them residential) to be organised for such teachers by the Association. The Training College Section has taken a prominent part in directing attention to this serious need and in organising five pilot courses planned to take place during the forthcoming session in Lancashire, Yorkshire, Nottingham, Norfolk and Derbyshire. It may well be that in years to come this new and perhaps rather ambitious venture may be shown to be one of the most significant national developments that has taken place in the work of the Association in recent years.

It is a pleasure to report that during 1953, as in 1952, there has been a further increase in our membership, which at the end of the last membership period numbered 3383, of whom 520 were student members (as compared with 3092 and 598 respectively last year.) The increase, however, is far below that needed to give us an income that is appropriate to our financial needs. Our income from subscriptions (£1,700) is only a little over half of our annual expenditure (£3,200). The difference between these two figures is made up from generous donations from our members, from conference receipts (if favourable conference balances are maintained), from the recovery of income tax where members have paid subscriptions under covenant and by the strenuous efforts of our staff at headquarters in promoting miscellaneous sales, income from advertisements, etc. But all of these are precarious sources of income, and the executive committee appointed a finance sub-committee to review the position and its implications and to make recommendations. This committee, with great reluctance, has recommended an increase in the annual subscription to one pound, so that the conduct of the affairs of the Association may be put on a proper financial basis.

During the year no less than four conferences have been organised : a successful Annual Conference in London, for which Dr. Balchin deserves a very warm vote of thanks ; a delightful Spring Conference at Lincoln, sponsored by the Lincoln Branch committee ; a Summer School, directed by Dr. Briault and Professor Wooldridge, in the Western Weald ; and a Diamond Jubilee Commemoration Meeting held in September, at Sheffield. Our warmest thanks are extended to all who helped to make these various functions outstanding successes and to the numerous members who supported the meetings and without whose attendance all endeavours would have come to naught.

Plans for the further extension of these activities during 1954 are already under way. The Spring Conference will be held at Exeter under the direction of Professor A. Davies. As a new venture, a summer field class is being organised abroad when Mr. Honeybone and Dr. Sinnhuber (both of the University of London) will direct a survey in the Austrian Tyrol from a centre near Innsbruck. Two years ago it was the privilege of this Association to organise the first International Conference of teachers of geography and to inaugurate an International Union of Associations of Geography. We are glad to report that plans are now under way for the organisation of the second International Conference to be held in Holland under the auspices of the Geografische Vereniging in Nederland in August, 1954. It is hoped to organise a party of our members to attend this conference and to represent the views of British teachers.

Branch activities during the year have been well maintained and a special word of thanks is due to those branch officers who have worked hard, sometimes under considerable difficulty to maintain support and interest for our subject. It is a pleasure to read branch reports and note the variety of local activities that are attempted, including, apart from lectures and excursions, the organisation of exhibitions, school competitions, the planning of new text books and the study of local geography. Heartening, also, is the news of the re-forming or new development of branches at no less than four centres during the year (at Reading, Glasgow, Stockton-on-Tees (Tees-side Branch) and Ipswich). The maintenance or development of local branches is one of the finest ways in which the interest of the Association can be served.

During the year good use has been made of the library and headquarters, and our staff are continuously occupied replying to numerous requests for books, geographical information, maps, etc., from members and others. The sale of special O.S. maps and other publications has been very active, both in Britain and abroad. Our American friends have not yet been able to organise the exchange of membership which we sought with American teachers of geography, but we are informed that we may hope for some arrangement to be made in the near future.

A new special publication, *The Geography Room in a Secondary School*, will shortly be on sale. We are greatly indebted to Mr. P. R. Heaton for his great efforts in preparing and illustrating this valuable statement indicating the special needs of geography teachers, and we hope that all members will persuade local authorities to take some heed of its contents. We have also expanded our journal far beyond its normal size during 1953. As members will have noted, an enlarged July issue was devoted to a special discussion of the recent floods ; and the November issue was a special Diamond Jubilee number more than twice the normal size of our publication. This gave to our members a history of the Association and its work for which we are indebted to Professor Fleure and to our President. The Jubilee section of this issue is being reprinted as a separate publication, and we shall be grateful for any help that members may be able to give in promoting its sales.

The new year will see the first fruits of yet another new venture which we hope will be of real assistance to our members, and which has called for much preliminary organisation during the past year. A large and representative group of qualified geographical correspondents, drawn from the United Kingdom and from overseas, has been invited to send us regularly information of current geographical interest and value. From this a selection of material most useful to teachers of geography will be made by Mr. L. S. Suggate, which we hope to publish in each issue of *Geography* under the title "This Changing World." To the numerous contributors scattered the world over, to Mr. Suggate and to our Hon. Editor we extend our very sincere thanks for their enterprise in this matter.

For many years it has been our hope that a map collection worthy of the Association might be built up at headquarters. It is a great pleasure to record that this ambition is at last in process of achievement. A considerable collection

of sheet maps exists for both British and foreign countries, and the Ordnance Survey is now maintaining at our Headquarters up-to-date complete cover of sheet maps for Great Britain on the one inch scale. An announcement will be made shortly in *Geography* regarding new facilities for members that can now be made available.

Our Section Committees have had a year of active work in many fields. *The Primary Schools Section* has continued its work on Sample Studies and the preparation of book lists and has held discussions on the use of the O.S. maps in Primary Schools.

The Public and Preparatory Schools Section has issued two numbers of its Gazette and is making arrangements to hold a conference at Jesus College, Oxford, from April 12th to 15th, 1954.

The Secondary Schools Section has completed a memorandum on the School Atlas (published in *Geography*) and has undertaken a thorough revision of book lists for secondary school use. Discussions have also been held on the question of specialisation in sixth forms. An attempt is being made to strengthen the representation of Modern and Technical Schools within the Section. After long and devoted service to the Section, Mr. Thurston retired from the Chairmanship and Mr. Goodson from the Secretaryship, these offices being filled respectively by Mr. J. A. Morris and Mr. R. Cole since January last.

The Section for Further Education in Geography is making a survey of the status of geography in Institutes for Further Education in Great Britain, and is clarifying the relation of geography teaching in such institutes to the requirements of External University Examinations (London). It is proposed also to review the content of the subject as specified for the numerous examining bodies other than Boards for the G.C.E. and the University of London, and to co-operate with the new Joint Examinations Board in the provision of syllabuses.

As reported above the *Training College Section* has during the past year been largely concerned with the consideration of the need for special short courses for practising teachers and with preparations for the pilot courses under this scheme.

The Standing Committee for Visual Aids reports that, following the retirement of Mr. E. F. Mills from the Secretaryship, Mr. D. Taylour has taken over that office. We are very grateful to Mr. Mills for his hard work in the past and are glad that he is able to continue as a member of the committee. The main activities during the past year have been concerned with the preparation of a booklet on "The use of pictures in the teaching of geography"; the organisation of the Visual Aids Display at the Association's Annual Conference; the showing of teaching films at the Annual Conference; and the reviewing of filmstrips. Close co-operation with the National Committee for Visual Aids in Education has continued, and the Committee has been acting in an advisory capacity in the preparation of two films, on "The Sea Coast" and on "Poland."

The Standing Committee for Urban Spheres of Influence reports that the survey now covers most of southern and eastern England and the Midlands. It is hoped that the completion of the pioneer phases of the work will not now be long delayed.

The Association is again indebted to those members who serve on Council and on the executive committee for the energy and thought which they so generously devote to its affairs. On their retirement from Council we express our sincere thanks to Professor S. H. Beaver, Mr. J. C. Larkinson and Mr. L. S. Suggate; and to Miss E. M. Coulthard who retires from both Council and executive committee.

This report, it is hoped, reflects in general terms the present vigorous life of the Association and the important educational rôle it has to play. We have had a very active year, and by the combination of a brave effort made by many and some measure of sheer luck we finish the year on this occasion with a small favourable financial balance on the year's working. But the financial anxiety that besets the officers at all time becomes more and more an intolerable burden, and we urge members to rally to the support of the Association in this, its sixty-first year, in appreciation of the devoted labours of those who have worked for the recognition of our subject in bygone years, and the efforts which your officers will gladly make on your behalf in the years to come.

December, 1953.

ALICE GARNETT,

Hon. Secretary.

ELECTION OF PRESIDENT, 1955

It is with pleasure that we have to announce that at its last meeting Council elected Mr. L. S. Suggate to the office of President for the year 1955, in succession to Professor Wooldridge, now in office. Mr. Suggate continues that list of distinguished school teachers of geography who have held this office from time to time, and represented by the names of Mr. B. B. Dickinson (1930), Mr. J. Fairgrieve (1935), Mr. C. C. Carter (1939-41), Mr. T. C. Warrington (1942-45) and Mr. L. Brooks (1951).

ANNUAL CONFERENCE, 1953-54

The Annual Conference, held once again at the London School of Economics by the generous courtesy of the Director, was an outstanding success, on grounds both of the content of the programme and the unusually large numbers of members who attended the meetings.

The programme was very well balanced. Symposia organised by our several section committees dealt with "The Place of Ordnance Survey Maps in the Primary Schools," "Specialization in VIth Forms," "Sketch Maps in the Teaching of Geography" and "Geography in Further Education." Lectures on formal geographical matters included two masterly addresses—by Mr. Honeybone on "Balance in Geography and Education," and by Mr. R. W. Steel on "Land and Population in British Tropical Africa"; we were delighted also by Capt. Cyril Diver's address on the work of the Nature Conservancy, reminding us of the importance of geographical understanding in the solution of ecological problems.

Modern travel and exploration were brilliantly illustrated in lectures by Dr. A. Stephenson on "Recent Exploration in the Polar Regions" and Mr. T. D. Bourdillon and Mr. C. W. F. Noyce on "The Ascent of Everest, 1953, and its significance." The latter was a joint meeting with the Royal Geographical Society and the Institute of British Geographers held at the Royal Geographical Society's House, to whose Council we are deeply indebted for this meeting and for lavish hospitality and tea following the lecture.

Practical problems in the use of visual aids were discussed at a symposium arranged by the Standing Committee on Visual Aids, which, in collaboration with the National Committee for Visual Aids and the Educational Foundation for Visual Aids, also arranged a programme of recent geographical films that was much appreciated. Elsewhere, to a packed meeting, Professor P. W. Bryan demonstrated in "Cornwall in Colour" the rare value and beauty of a colour film that is made by a geographer of high standing, and by one who is at the same time both a master photographer and a first rate teacher skilled in the use and application of visual and aural aids, as he ably demonstrated to his enthusiastic audience.

To our Conference Organiser, Dr. Balchin, very warm thanks are once more due for his organisation of a "wonderful" programme (as it was described by many) including in addition to lectures a very successful Twenty-third Annual Dinner, at which we were happy to welcome Professor and Mrs. Debenham, Dr. Stephenson and Professor G. Kuriyan (University of Madras) as our guests. This function was attended by nearly ninety members. The conference was concluded by four most valuable excursions—to the Map Room of the British Museum; to the Meteorological Office Central Forecasting Office at Dunstable; to the Port of London; and to Down House, Downe, and the surrounding district of Kent. Our debt to Dr. Balchin is a very real one, when we remember that in addition he organised the facilities for the various exhibitions (especially the Publishers' exhibition) held in the L.S.E. buildings. For the help of Mr. Heaton and others in staging an exhibition of Visual Aids and apparatus of value to geography teachers we are also very grateful.

Finally the Honorary Secretary has special pleasure in placing on record our sense of indebtedness to our retiring President, Dr. Howarth, for the stimulating presidential address with which he opened the meetings, for his diligent attendance at so many business meetings and lectures, for presiding with his inimitable brevity and wit on the occasion of the dinner, and for his generous expenditure of time and energy in leading an excursion to Down House, Kent.

This conference brought to a fitting close the year of our Diamond Jubilee whilst for the future, by its excellence, it indeed presents a challenge.

The Spring Conference will be held at Exeter from April 20th to 24th. The programme and booking leaflet are included with this issue of *Geography* and members wishing to attend the Conference are advised to make early application according to the instructions given.

A leaflet is included with this issue informing members of a Field Class in Austria that is being organised for the Association by Mr. R. C. Honeybone and Dr. K. A. Sinnhuber. The party will be accommodated in a hotel at Sistrans near Innsbruck. As accommodation is limited, early registration on the form provided is essential. Members should note that the date of the beginning of the course, shown on the registration form as August 11th, should read August 12th. This change has been made to ensure reservations for a more convenient and comfortable outward journey, which will be made by the German route.

The second international conference of teachers will be held in the Netherlands from August 22nd to 29th, 1954. The organising secretary is Professor A. C. de Vooy, Utrecht. There will be sections for the discussion of teaching problems at all levels of instruction and it is hoped that there will be a strong representation of British teachers of geography at the meetings. Professor L. Dudley Stamp, President of the International Geographical Union, will be attending the Conference. The inclusive cost of residence and excursions cannot yet be precisely ascertained but is likely to be of the order of about £10; travelling expenses between Great Britain and Holland are additional to this. If a sufficient number of members of the Association indicate a desire to attend the Conference, a party will be organised. Please let headquarters know at once if you wish to have further particulars and think that you may wish to join a party.

We record with gratitude the receipt of donations, some made under covenanted agreement to pay for seven years, in response to our appeal for financial help :

(January, 1953 to January, 1954)				£	s.	d.
Sir William N. Himbury (second donation)	..	..	..	25	0	0
Mr. L. Brooks (second covenanted donation)	..	..	..	6	0	0
Miss B. B. Skinner (incl. first covenanted donation)	..	..	..	5	19	0
Mr. C. H. Saxelby	..	..	..	1	0	0
" " " (two covented donations)	..	..	..	3	16	0
Blackpool and District Branch	..	..	..	3	3	0
Mr. L. S. Suggate	..	..	..	2	2	0
Mrs. I. Morris	..	..	..	2	0	0
Mr. C. B. Moller (second covenanted donations)	..	..	..	1	18	0
Mr. J. R. Wilding (first covenanted donation)	..	..	..	1	8	7
Prof. H. J. Fleure (first covenanted donation)	..	..	..	1	3	10
Miss H. C. Lamb (second covenanted donation)	..	..	..	1	3	10
Miss G. M. Mills	..	..	..	1	0	0
Miss I. H. R. Stevenson	..	..	..	12	0	0
Miss K. Gribble	..	..	..	10	0	0
Huddersfield and District Branch	..	..	..	10	0	0
Miss J. K. Wallis	..	..	..	10	0	0
Mr. M. B. Carr	..	..	..	7	6	6
Mr. R. F. B. Caukwell	..	..	..	7	6	6
Miss E. M. Dawson	..	..	..	7	6	6
Miss M. M. Redman	..	..	..	7	6	6
Miss M. Sammons	..	..	..	7	6	6

We are grateful, too, to those members who, in anticipation of a higher rate of subscription, have already sent an increased amount in payment of current dues.

Members are urged to take note of the proposals regarding increases in the subscription and to support the Association by maintaining membership during the period of transition. We urge members to endeavour to do all in their power to increase membership.

BRANCH NEWS

Birmingham. Miss P. I. Nicklin, secretary of the Birmingham Branch, reports the successful organisation during last Summer Term, under the auspices of the Branch, of a group of well-attended Vth form excursions under the leadership of local experts, to study several different aspects of the geography of the Birmingham region. It is reported that this venture had the approval and support of local education authorities and teachers outside the Association.

The Birmingham Branch is arranging jointly with the University of Birmingham and the Residential Education Centre at Attingham Park a Local Study Weekend, from May 28th to 30th, 1954. The cost is approximately £2, and Miss Nicklin, 16, Middle Park Road, Selly Oak, Birmingham, 29, will gladly supply further details of the course.

Bolton. In collaboration with the Bolton Branch of the Historical Association and the Bolton Field Naturalists Society, members of our Bolton Branch have prepared and published a handbook entitled *Bolton Survey* under the editorship of Mr. C. H. Saxelby. This is a fine example of the valuable work that branches can undertake in making local surveys and we hope that other branches may be inspired to copy this ambitious effort. A copy of the Survey may be consulted at or borrowed from the Association's library. Copies may be obtained from Mr. Saxelby, 2, Ducie Avenue, Bolton; the price is 8s. 6d.

Ipswich. An effort is being made to form a new branch to serve Ipswich and the surrounding district. Members in that locality are asked to give this venture their support; the local secretary is Mr. R. T. Cobb, Woolverstone Hall, Woolverstone, nr. Ipswich.

Norfolk. Mr. P. Walton, secretary of the Norfolk Branch, reports a group excursion of 30 pupils from seven Grammar Schools to a meteorological station, which also had the enthusiastic co-operation of the headmasters of the schools.

Tees-side. Members in South Durham who would like to have information about the programme of activities of the new Tees-side Branch should apply forthwith to Mr. S. G. Cooke, Stockton Grammar School, Norton Road, Stockton-on-Tees.

SCHOOL AND STUDENT VISITS TO HEADQUARTERS

In March, 1953, we welcomed a visit to headquarters and the library and our local viewpoint, Sky Edge, from upper form girls and their teacher, Miss M. Hughes, of Varndean School, Brighton, during their week's visit to this neighbourhood. In July, we were visited by a party of 90 children and staff, led by the geography master, Mr. G. S. Hallowes, from Sowerby Bridge Grammar School, during the course of a school journey (one day) to Sheffield and North Derbyshire. We had previously given assistance with the itinerary and the arrangement of industrial visits in Sheffield, and the children were given a brief talk on the site and plan of the City.

During the Spring and Summer terms we have also been able to act as liaison for local industrial visits on behalf of the County Grammar School for Boys, Hove, and a secondary modern school in Nottingham.

Early in the Michaelmas Term, 1953, first-year students of the Department of Geography at the University of Sheffield paid a formal visit in the course of a field excursion in and around the City.

LANTERN SLIDES AT HEADQUARTERS

We are grateful to Mrs. Fairgrieve-Macdonald for placing at our disposal Mr. Fairgrieve's large collection of lantern slides, at his request. These are now deposited at headquarters, and as soon as possible a revised list of the sets now available will be issued for members' use. There have also been added in recent years substantial gifts of lantern slides from the late Dr. Vaughan Cornish and Mrs. Quiggin.

SOURCES OF CURRENT GEOGRAPHICAL INFORMATION

Some considerable time is spent by headquarters staff in compiling and classifying references to articles of geographical interest in periodicals received at the Association's library. These references are published under the title "Geographical Articles in Magazines Received" (see pp. 61 of this issue) twice a year and should be of much value to teachers. Examples from the current list are: "Physical elements of agricultural land use in the Nile delta" by M. I. Hassan, in the *Bulletin of the Geographical Society of Egypt*, 1953, "St.

Lawrence seaway and power project " by L. Chevrier, in the *Geographical Journal*, December, 1953, and " Trends in Brazilian agricultural development " by P. E. James, in the *Geographical Review*, July, 1953. Any of the journals listed may be borrowed by full members or student library members of the Association, and enquiries for them will be welcomed at headquarters.

The Geography Room in a Secondary School

Orders can be accepted at headquarters for the new memorandum on the school geography room, now on sale, price 2s. 6d. post free. The memorandum is well illustrated and we shall be very grateful if members will make a special effort to interest heads of school, members of L.E.A.'s and school architects in this publication.

SALE OF SURPLUS COPIES OF WATER AND CONTOURS MAPS

The following sheets, showing water and contours only, are available for sale, on application to headquarters with an appropriate remittance :

1/25,000 scale, 2/6 each, add 8d. for packing and postage on each order :
 12/70, Skokholm Is. ; 25/92, Workington ; 31/09, n. of Pontypridd ; 32/22, Black Mts. ; 32/33, E. Black Mts. ; 32/85, Worcester ; 33/42, Baschurch, Shropshire ; 33/56, Tarporley ; 35/32, Skiddaw ; 41/43, n. of Winchester ; 41/71, S. Downs, s. of Petersfield ; 42/19, sw. of Tamworth (2 copies) ; 43/62 Willoughby, Notts. ; 44/38, S. Otterington, N. Riding ; 44/41, Ackworth district ; 51/55, Sevenoaks. 1 in. scale, 3/- each, add 8d. for each order :
 Sheet 97, York ; (Scotland) Sheet 19, Ullapool ; Sheet 65, Dunoon (24 copies).

RECIPROCAL EXCHANGES OF PUBLICATIONS WITH

THE AMERICAN NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

Arrangements have now been made with the National Council of Geography Teachers for the exchange of publications between members of the National Council and of the Geographical Association, which was first announced in *Geography*, vol. xxxvii, 1952, p. 239. Under this scheme, participants in the U.S.A. will receive *Geography* and special publications of the Geographical Association as they are issued ; in Great Britain, participating members will receive the *Journal of Geography* (issued nine times a year) and special publications of the N.C.G.T. The current rate of subscription to the scheme for members of the Geographical Association is one guinea (one year).

At present only sixteen exchanges can be arranged, but it is expected that more American geography teachers will wish to join the scheme. As we already have a list of names of British teachers wishing to participate, the first sixteen applicants will be informed of details ; others will be informed as requests for the exchange are received from America. Members who have not already applied for publication exchanges and who now wish to do so should write to the Assistant Secretary. No remittance should be sent until it is requested by headquarters office.

STUDENT GEOGRAPHICAL CONFERENCE

The fourth inter-university Geographical Conference organised by student societies will be held at Bedford College, London, from April 11th to 16th, 1954.

RESIDENTIAL COURSE IN VISUAL AIDS TO EDUCATION

The Leeds Institute of Education has arranged a week's residential course in visual aids to education, from March 20th-26th, 1954. The course is organised in collaboration with the National Committee for Visual Aids in Education and the Educational Foundation for Visual Aids, and is designed as a pilot course for those persons to whom a local Education Authority would turn for help and advice on visual education whether they are administrators, inspectors or teachers in schools and colleges. For further details and the full programme application should be addressed to the National Committee for Visual Aids in Education, 33, Queen Anne Street, London, W.1.

DANISH LECTURE SERVICE

The Royal Danish Embassy has furnished headquarters with a list of speakers resident in Great Britain who are willing to lecture on aspects of Denmark, under a Danish Lecture Service instituted by the Embassy. Further copies of the list can be obtained from the Press Office of the Danish Embassy, 29, Pont Street, London, S.W.1, by branch officers or members interested in this scheme.

GEOGRAPHICAL ASSOCIATION

55

THE GEOGRAPHICAL ASSOCIATION

BALANCE SHEET

31st August, 1953

1952	£		£ s. d.	£ s. d.	£ s. d.
ACCUMULATED FUND					
393		Balance at 31st August, 1952	241 10 1		472 15 10
57		Add Surplus for the year as per Income and Expenditure Account	5 8 0		141 9 1
336			<u>246 18 1</u>		
87		Less Transfer to Jubilee Fund.. .. .	—		170 0 4
8		Transfer to Herbertson Memorial Fund	—		57 9 0
					<u>227 9 4</u>
241		GENERAL RESERVE	246 18 1		189 8 6
180		SUBSCRIPTIONS PAID IN ADVANCE	230 0 0		38 0 10
195			149 0 0		<u>200 0 0</u>
333		SUNDRY CREDITORS	1,527 15 9		
			<u>1,676 15 9</u>		
1,029			<u>2,153 13 10</u>		2,153 13 10
PUBLICATIONS RESERVE FUND					
1,122		Balance at 31st August, 1952	1,165 6 11		
43		Add Surplus on Maps Sales Account	75 1 9		
1,165			<u>1,240 8 8</u>		23 5 1
		Add Interest for the year	21 8 4		210 12 6
1,165			<u>1,261 17 0</u>		23 18 0
LIFE MEMBERSHIP SUBSCRIPTION FUND					
2,238		Balance at 31st August, 1952	2,457 2 3		
219		Add Subscriptions received during the year	135 19 6		
2,457			<u>2,593 1 9</u>		1,004 1 5
					<u>1,261 17 0</u>
ASSETS					
PUBLICATIONS RESERVE FUND ASSETS					
		Duplications at cost	32 3 2		
		Less Depreciation	8 13 1		
27		STOCK—Map Sets .. .. .	.. .. .	
208		SUNDRY DEBTORS .. .. .	.. .. .	
24		CASH AT BUILDING SOCIETY	927 5 6		
906		CASH AT BANK	76 15 11		
1,165			<u>1,004 1 5</u>		
LIFE MEMBERSHIP SUBSCRIPTION FUND ASSETS					
INVESTMENTS, at par					
		£1,646 4s. 2d. 3% Savings Bonds 1965/75	1,646 4 2		
		£300 3% Savings Bonds 1955/65	300 0 0		
2,116		£170 3% Defence Bonds (Market Value 31st August, 1953, £1,886 9s. 6d.) .. .. .	.. .. .	
		CASH AT BUILDING SOCIETY	435 10 1		
341		CASH AT BANK	41 7 6		
2,457			<u>476 17 7</u>		
£4,651		Carried forward			2,593 1 9
					<u>£6,008 12 7</u>

THE GEOGRAPHICAL ASSOCIATION

BALANCE SHEET—CONTINUED

		1952		31st August, 1953	
		£	s. d.	£	s. d.
Brought forward		4,651		6,008	12 7
JUBILEE FUND					
Balance at 31st August, 1952		820	6 1	820	0 0
Add Transfer from Accumulated Fund		87	—		
Interest on Building Society balance and Investment		—	26 15 8		
		907	934 1 9		
Less Deficiency on Diamond Jubilee Commemoration		—	42 5 11		
			891 15 10		
		907		71 15 10	
					891 15 10
HERBERTSON MEMORIAL FUND					
Balance at 31st August, 1952		282	272 12 8		
Add Interest for the year		8	7 18 1		
Transfer from Accumulated Fund		8	—		
		298	280 10 9		
Less Lecture Expenses		25	—		
		273		280 10 9	
		£5,831		£7,180 19 2	
JUBILEE FUND ASSETS					
INVESTMENT at par—					
£820 3 % Savings Bonds 1965/75		820		820	0 0
(Market Value 31st August, 1953, £711 7s.)					
CASH AT BUILDING SOCIETY			89 9 9		
Less Amount to be transferred to the Banking Account ..		87	17 13 11		
				71 15 10	
		907			891 15 10
HERBERTSON MEMORIAL FUND ASSETS					
INVESTMENT at par—					
£250 3 % Savings Bonds 1965/75		250		250	0 0
(Market Value 31st August, 1953, £216 17s. 6d.)					
CASH AT BUILDING SOCIETY			23 0 9		
CASH AT BANK		23	7 10 0	30 10 9	
		273		280 10 9	
		£5,831		£7,180 19 2	

We have audited the above written Balance Sheet dated 31st August, 1953, and certify that in our opinion it is properly drawn up so as to exhibit a true and correct view of the position of the Association at that date according to the best of our information and the explanations given to us, and as shown by the books of the Association.

17th November, 1953.
W. H. HIMBURY,
Hon. Treasurer

HOLMES, WIDLAKE & GIBSON,
Chartered Accountants
SHEFFIELD

Background to World Affairs

CZECHOSLOVAKIA

A geographical and historical study

by HARRIET WANKLYN, M.A. (Mrs. J. A. Steers), Lecturer in Geography in the University of Cambridge

An authoritative study containing a vast amount of detailed information unobtainable elsewhere. Much of the work was compiled in Czechoslovakia immediately before that country became a satellite of Russia. Sections on both Bohemia and Slovakia contain chapters on their history, climate, vegetation, soils, forests and forest industries, farming, industry and trade, communications, population and settlement. 450 pages with 59 pages of photographs, 77 maps and diagrams, and Index. 8½ by 5½ inches. Cloth boards, 30s. net. *Publication date : February 8th*

THE PEOPLES OF THE SOVIET FAR EAST

by WALTER KOLARZ

The first account of the Soviet "nationalities" policy towards Russia's autonomous Republics and other national groups within the Soviet Far East, and towards the Mongol Peoples Republic. Although self-contained, this new work by Walter Kolarz is a companion volume to his "Russia and Her Colonies." As with the earlier book, material from Soviet journals, papers and novels, and plays are used to illuminate his theme. 180 pages with maps. 8½ by 5½ inches. Cloth boards with picture jacket, 15s. 6d. net.

by the same author

RUSSIA AND HER COLONIES

An exact and exhaustive account of the political treatment of the non-Russian peoples living in the U.S.S.R. 340 pages, with five maps. 8½ by 5½ inches. Boards, 25s. net.

**George Philip and
Son Limited.**

**30-32 Fleet Street,
London, E.C.4.**

A NEW EDITION
OF A WELL-KNOWN BOOK

STEMBRIDGE'S WORLD

SECOND EDITION

*Pp. 512, with 312 maps and diagrams and
94 half-tone illustrations. 12s. 6d.*

This book, which has just appeared in a new edition, is intended for pupils in the last stages of preparation for the Ordinary Level examination, and covers some of the ground for the earlier stages of the Advanced Level examination. In this new edition made necessary by the political and economic changes of recent years and by the increasing requirements of examining bodies, the text has been revised and many of the maps and diagrams redrawn.

*Applications for inspection copies
should be addressed to the*

OXFORD UNIVERSITY PRESS

Education Department

Oxford

HARRAP

Map-reading for Schools

MARGARET WOOD, B.Sc., *Headmistress, Newquay County School for Girls.*

In the second edition of this text, published in 1950, the maps have been brought up to date, notes on the National Grid are given, and an example of the 1 : 25,000 Ordnance Survey Map included. "For this book we have nothing but praise. It is at once simple and scholarly. . . . The book is well got up, maps and pictures are beautifully reproduced and altogether it is an excellent piece of work."—*Journal of Education* on the first edition.
Seventh Impression (Second Edition). 7s. 6d.

A Contour Dictionary

J. B. GOODSON, M.A., and J. A. MORRIS, B.Sc. (Econ.),
Geography Department, Latymer's School, Edmonton.

The authors have designed this book to meet the needs of candidates taking Geography in the General Certificate of Education and similar examinations. "It deserves success."—*Geography*.
"The exercises have been skilfully graded and the student will find them interesting to work."—*The Times Educational Supplement*.
Eighth Impression (Second Edition). 4s. 6d.

A prospectus on these books is available

182 HIGH HOLBORN, LONDON, W.C.1

LIVERPOOL STUDIES IN GEOGRAPHY

1. The Belgian Kempenland

By F. J. Monkhouse. Illustrated.

17s. 6d. net.

A compact systematic account of the transformation of one of the notable heaths of Western Europe into a hive of modern industry, both before and since the exploitation of a deeply buried coalfield.

2. Maps and Politics

By H. R. Wilkinson. Illustrated.

30s. net.

The author uses the maps of Macedonia to exemplify the characteristics of ethnographic maps in general, the merits and limitations of which do not appear to be generally appreciated.

3. Sandy Shores in South Lancashire

By R. Kay Gresswell. Illustrated. 30s. net.

This book, the outcome of several years' observation and work on the coast between Blackpool and Birkenhead, is an important contribution to coastal studies, of which there are all too few in this country.

A Scientific Survey of Merseyside

Prepared for the British Association meeting, Liverpool, 1953.

Edited by Wilfred Smith. Illustrated. 21s. net.

The Survey, as its name implies, is an extensive report on Merseyside and the Merseyside district compiled on scientific principles. It covers the historical background, the social structure, economic, industrial, and demographic problems. It is an invaluable contribution to regional studies.

The Mersey Estuary

By J. E. Allison. Illustrated. 3s. 6d. net.

Physical Survey of Merseyside

By Wilfred Smith.

5s. net.

UNIVERSITY PRESS OF LIVERPOOL

REVIEWS OF BOOKS.

WITH very rare exceptions, books reviewed in this journal may be borrowed from the Library by full members or student library members of the Association.

Prehistoric Europe ; an economic basis. J. G. D. Clark. 20.5 × 27.75 cm. xix + 349 pp. London. Methuen & Co., Ltd. 1953. 60/-.

Professor Clark departs to a certain extent, from the chronological sequence, in order to treat of life and of the ways in which objects found were made and used. As so much of our knowledge is derived from finds in tombs and other monuments, the author has to make the most of what is at times, scanty evidence, but it is evidence to which he himself has made splendid contributions. Maps of geographical distributions of finds help greatly and Professor Clark has specialised in quantitative evaluations of remains of cereals, fruits, domestic and wild animals, etc. With the diminution of woodland, because of dry conditions in the Bronze Age and of tree felling, sheep became much more important in many places. The horse also became significant. The powerful wild cattle of the Old Stone Age were made almost diminutive under conditions of domestication by early farmers. Early ploughing, almost certainly by castrated oxen, meant a light plough (*araire, ard*) scratching the surface into a fine tilth that preserved the soil's moisture. This scheme, evolved in south-western Asia, suited light soils in lands of warm summer where evaporation drew water-dissolved salts for plant food up to the surface. It was a scheme useful also on the aerated friable European loess once its rather light woodland, a heritage from ice-melt dampness, had been cut. The trees did not grow again very easily. Only later did heavy ploughs with larger ox-teams overturn the damp clays of the cut oak woods where plant food had been washed down into deeper layers. The preference for house and village sites on lighter soils long survived this utilisation of the clays.

Of many ideas of interest to geographers, one example must suffice. The stones from which Neolithic axes were made are being traced back to their origins. Craig Lwyd, Penmaenmawr, N. Wales, is the origin of axes taken to the Cotswolds, Wilts. and Dorset probably by sea, perhaps around West Wales to the Bristol Channel, also the Cambridge and Edinburgh areas. Axes from Langdale (Cumberland) were taken to the Cotswolds, Wilts. and Dorset, Oxfordshire and the Fens as well as to the Isle of Man and S. Scotland. Both types reached Yorkshire. Antrim axes (from Tievebulliagh) were taken along the east coast of Ireland but also reached the Cotswolds and the Medway.

Geographers will welcome Professor Clark's book as evidence, also, of the penetration of an idea for which they have fought. He emphasises continually the triune topic of Biome (human, animal and plant life), Habitat and Culture, a welcome change from old and artificial distinctions between heredity and environment.

H.J.F.

Green Gold and Granite : a background to Finland. Wendy Hall. 14 × 22 cm. 190 pp. London : Max Parrish, Ltd. 1953. 17/6.

This attractively written and well produced book is the best popular account of Finland in English which has been published for many years. The "Green Gold" of the title stands for the timber which covers 70% of the land and accounts for over 80% of the country's exports; the "Granite" refers to the Finnish character as well as to the bedrock of Finland. The book falls into three parts. "The Land and the People" is succeeded by an appreciation of the arts and achievements of the Finns. The third part deals with the political, economic and social status of Finland to-day. Miss Hall has a close acquaintance with Finland and a latch key to almost every door. Nowhere has she used it more successfully than in her "Portrait of an Industrial Worker" at Tampere and in her picture of a farm family at Sääksmäki. This is the seventh book in 70 years written about Finland by a woman. It measures how far an indomitable country has advanced since Mrs. Tweedie travelled "Through Finland in Carts" in 1896.

W.R.M.

Denmark, May, 1951. Report of the Danish National F.A.O.—Committee to the Food and Agriculture Organisation of the United Nations. 15.5 × 23 cm. 107 pp. Denmark : Danish National F.A.O. 1951.

This is a comprehensive résumé of the main facts of Danish rural economy. Most of the report deals with agriculture itself, covering diverse topics from land utilization to rural welfare. Other chapters include a brief survey of Denmark's economic structure, forestry, the fishing industry and nutrition. The many statistics quoted refer to post-war years up to 1950 and 1939 figures are also given in most cases for purposes of comparison. A useful supplement to the U.N.F.A.O. Year-books.
A.J.H.

Living Democracy in Denmark. P. Manniche. 16 × 23.5 cm. 240 pp. Copenhagen : G.E.C. Gad. 1952. n.p.

No one is better fitted than Dr. Peter Manniche to write a book on Denmark. In this volume, the story, familiar to everyone in outline, takes on flesh and breathes. Karel Capek's description of Denmark as "a fat peasant child with a head too big, and too intelligent" is aptly quoted, for that, in essence, is the summary of Dr. Manniche's book. With his unique knowledge, he relates with unflagging interest, the story of the great men, the co-operative institutions, the folk high schools and the town and village societies of his country in the period of recent economic and cultural changes. In no sense a geography, it yet provides a vivid exemplification of a folk revolutionizing an environment and in turn reacting to the reorganized land and its resources.
D.S.

In the Antarctic : Stories of Scott's Last Expedition. F. Debenham. 12.25 × 19 cm. 146 pp. London : John Murray, Ltd. 1952. 7/6.

Professor Debenham looks back over 40 years or more to his adventures with the *Terra Nova* expedition to the Antarctic. With the help of his diaries and the *Polar Times*, he gives a vivid picture of life at the expedition's base and of sledge journeys in the neighbourhood. The book is short and the author avoids the monotony which is characteristic of so many polar books. There are, of course, chapters on penguins and the winter visit to the Emperor rookery, but perhaps the most important chapters are those on the killer whale, curiously abundant in the Ross Sea and comparatively rare in the Weddell Sea. Another chapter deals with the growth of shelf ice from below, compensating in some measure for the loss of ice from above by ablation, a fascinating theory. The book has sketch maps and woodcuts.
R.N.R.B.

Health and Agriculture in China. J. C. Scott. 14.25 × 22 cm. 279 pp. London : Faber and Faber, Ltd. 1953. 25/-.

This is an account of research in "Agricultural Sanitation," a term defined for us as "the successful sanitation of the environment of man and his domestic animals by means which are an integral part of sound agricultural practice." The work, financed by the Rockefeller Foundation, was carried on by the Cheeloo and Yenching Universities between 1933 and 1941 when it was terminated by the Japanese occupation but not, happily, before techniques had been evolved, results obtained and principles elucidated which are manifestly of first importance for the improvement of health and agriculture not only in China but throughout the world. For, as indicated convincingly in an introductory chapter, agricultural sanitation problems are everywhere present and mankind pays very heavily for his ignorance or neglect of them. A survey of existing practices of waste disposal and fertilizer production in North China, in urban and rural environments respectively, leads on to one of the nature and spread of resultant faecal-borne diseases and to the role of flies in relation to health. Finally, the experiments undertaken to solve the problems thus created are described in detail. Though addressed primarily to agriculturalists and public health workers all students of China and of world-wide environmental problems will profit from this work whose sub-title "a fundamental approach to some of the problems of world hunger" is wholly justified. Only one printing error (p. 134 "itrogen" for "nitrogen") was noted.
A.V.W.

Daybreak in China. B. Davidson. 13.5 × 20.5 cm. 191 pp.
London: Jonathan Cape, Ltd. 1953. 10/6.

The author was one of a party of 30 which visited China in the autumn of 1952 on the invitation of the Chinese People's Institute of Foreign Affairs transmitted through the Britain-China Friendship Association. He travelled the length of the country from Peking to Canton and back again and his account ranges over every aspect, political, social and economic, of life in the new China. He writes, he tells us, as a non-Communist but as one whose bias is for China's freedom which, he believes, he shares with most of the world's peoples. We are sure this belief is true but equally sure that very many have at least serious doubts as to whether freedom has in fact come to the long-suffering Chinese people. Mr. Davidson has none but, contrary to his aim, his book will reinforce the reservations in serious minds rather than otherwise. A more skilful propagandist would surely have been content to paint a promising "daybreak." Mr. Davidson's picture is of high noon on a perfect day—there are no shadows, only sunshine. That he found nothing at all to criticise but only to praise inevitably suggests that there were some things and people that he was either not permitted to see or else chose to ignore. A.V.W.

Archæology in the Field. O.G.S. Crawford. 19 × 25 cm. 280 pp.
London: The Phoenix House Press, Ltd. 1953. 42/-.

"There was a time when archæology was voted a dull subject, fit only for dry-as-dusts; yet it was not the subject that was dull, but its exponents." This characteristic phrase is from the editor's introduction to the first volume of *Antiquity* (1927), which exhorts archæologists to use air photographs and to take present as the key to the past, notably in Algeria. As editor, former Archæology Officer of the Ordnance Survey and as writer of robust and stimulating prose, Dr. Crawford is a vital force in modern archæology. He is never dull.

The book under review summarises many of his interests. It briefly traces the growth of archæology and in many short and well illustrated chapters discusses roads, field systems, earthworks, houses, tombs and medieval parks. The emphasis is on Wessex and southern Scotland and there and elsewhere many will learn how to hunt for these features with the same enthusiasm which the author shows for the pursuit of "clean-booted historians" and French indoor archæologists. The closing chapters and comparative material in the body of the book describe fields for overseas study, notably of living prehistory in North and East Africa and neglected prehistory in Western Europe. It could be urged that Australasia, e.g. the high plateau of New Guinea, provides published examples of primitive prehistory which might have been mentioned and that some of the suggested voyages of discovery may prove unrewarding. Examples are the search for the crop-sites of primitive Australians (p. 50) and for the great circle at Armagh (p. 169). The classification of megaliths is rather confusing. But the absence of jargon, the all-pervading fresh air and the common sense and originality of so many of the observations made in the field make this an invaluable book for archæologists, geographers and historians alike. M.D.

An Explorer-Scientist's Pilgrimage—an Autobiography. W. H. Hobbs. 14.5 × 22 cm. 222 pp. Ann Arbor (Mich.) J. W. Edwards. 1952. \$3.75c.

Most of the older geographers know Hobbs; he has a passion for attending conferences and gatherings of all sorts, for his interests are wide and his capacity for friendship is great. We have differed from Hobbs on many issues, but we have never lost our regard for him, and our pleasure in his company. He is a tireless traveller and age makes very little difference to his eagerness for being on the move. He was well over 60 when he entered the realm of polar travellers on the ice cap of Greenland. His work on glaciers and mountains is well known and so too is his theory of the glacial anticyclone, even if it seems unsupportable in its entirety. Latterly, Hobbs has expounded a pronounced anti-British view of the early sealers' discoveries in Graham Land and has given the honours to Americans but his interpretations of these voyages have met with little acceptance outside the United States. The book, however, is most welcome and we wish that our old friend had written at greater length from his store of world-wide experiences. R.N.R.B.

The Mapmaker's Art. E. Lynam. 19.25 × 25.75 cm. xii + 140 pp. London. The Batchworth Press, Ltd. 1953. 21/-.

The late Dr. Lynam, when Superintendent of the Map Room at the British Museum, wrote many scholarly, graceful and informative essays and papers on the great collection of maps under his charge and on rare maps in his private possession. He always chose the illustrations with great taste and care, and the seven out of his miscellaneous writings now gathered into book form give us a very lovely volume, one which forms, too, a notable contribution to the history and technique of cartography. More than fifty facsimiles of old maps, plans, and portraits illuminate such topics as *The Character of England in Maps*, *English Maps and Map Makers of the Sixteenth Century*, *Ornament, Writing and Symbols on Maps*, *Flemish Engravers in England*. Those who possess any of the fine reproductions of Saxton's county maps published by the Museum will probably find the essay on that surveyor and his Atlas particularly welcome, while young readers will perhaps turn first to the chapter on William Hack of Wapping New Stairs who drew charts for the South Sea buccaneers. The book deserves a place in every geographical library, whether in school or university and, as it has been most handsomely and luxuriously produced by the Batchworth Press, seems remarkably cheap at one guinea.

E.G.R.T.

Geographical Articles in Magazines Received.

CONTINUED FROM VOL. XXXVIII, pp. 205 to 207.

Journals listed here may be borrowed from the Library by members of the Association. References are listed according to the classification published in the *Annals of the Association of American Geographers*, Vol. XXVII, June, 1937.

A of G—Annals of the Association of American Geographers. AJ—Alpine Journal. A of Sc—The Advancement of Science. BE—Bulletin de la Société de Géographie d'Égypte. BGB—Bulletin de la Société de Géographie de Beograd. CGR—Geographical Review of India (formerly Calcutta Geogr. Review). EG—Economic Geography. F—Fennia. GA—Geografiska Annaler. GJ—Geographical Journal. GR—Geographical Review. GSI—Bulletin of Geographical Society of Ireland. GTD—Geografisk Tidsskrift, Journal of Det Kongelige Danske Geografiske Selskab. IGJ—Indian Geographical Journal (formerly Journal of Madras Geogr. Assoc.). J of G—Journal of Geography. LER—Les Etudes Rhodaniennes. LER (Mem.)—Inst. Etudes Rhod. Univ. Lyon, Memoires et Documents. LS(H)—Lund Studies (Human). LS(P)—Lund Studies (Physical). MO—Marine Observer. NG—New Zealand Geographer. NGT—Norsk Geografisk Tidsskrift. NSW—New South Wales Bank Review. PGA—Proceedings of the Geologists' Association. RBG—Revista Brasileira de Geografia. RGA—Revue de Géographie Alpine. RGI—Rivista Geografica Italiana. SAJ—South African Geographical Journal. SGA—Svensk Geografisk Årsbok. SGM—Scottish Geographical Magazine. SR—Sociological Review. T—Terra. TG—Tijdschrift voor economische en sociale geografie. TPR—Town Planning Review. UE—United Empire.

(E)—English Summary. (F)—French Summary. (G)—German Summary.

*—Map.

GENERAL GEOGRAPHY AND TRAVEL. E. A. ACKERMAN, EG, July '53.—Regional research—emerging concepts and techniques in the field of geography. A.A.G., A of G, Jne '53.—Abstracts of papers presented at the 29th annual meeting, 1953. J. N. L. BAKER, IGJ, Jub. Vol. '52.—Geography in the *Essays of Elia*. H. BOESCH, IGJ, Jub. Vol '52.—Major problems in geography. J. W. COULTER, J of G, May '53.—Comments on human geography and physical geography. G. R. CRONE, GJ, Dec. '53.—"The Mariners Mirror" 1588. W. EDEL, J of G, Sept. '52.—Geography and world affairs. K. C. EDWARDS, IGJ, Jub. Vol. '52.—Land, area and region. T. GIRTIN, GJ, Jne. '53.—Mr. Hakluyt, scholar at Oxford. V. HANSEN, GTD, '52-'53.—Landscape geography (in Danish). H. HARTLEY, A of Sc, Dec. '53.—Life and times of Sir Richard Gregory. H. F. P. HERDMEN, GJ, Dec. '53.—Voyage of "Discovery II," 1950-51. I. G. U. CONGRESS, Washington 1952: a report, GJ, Mar. '53. R. H. KINVIG, A of Sc, Sept. '53.—Geographer as a humanist.

W. KIRK, SGM, Ap. '53.—Geographical significance of Vitruvius' *de architectura*. W. KIRK, IGJ, Jub. Vol. '52.—Historical geography and the concept of the behavioural environment. W. E. POWERS, J of G, Nov. '52.—Position of physical geography among the sciences at Northwestern University. F. K. SCHAEFER, A of G, Sept. '53.—Exceptionalism in geography: a methodological examination. SGM, Dec. '53.—Geography at the British Association, 1953. O. H. K. SPATE, GJ, Dec. '52.—Toynbee and Huntington: a study in determinism. A. STONE, J of G, Apr. '53.—Geopolitics as Haushofer taught it. G. T. TREWARTHA, A of G, Jne. '53.—Case for population geography. J. WREDFORD WATSON, J of G, Nov. '53.—Geography in relation to the physical and social sciences.

MATHEMATICAL GEOGRAPHY AND CARTOGRAPHY. M. C. GOODMAN, J of G, Mar. '53.—Recent maps of interest to teachers of geography, II. A. J. HUNT, TPR, Oct. '52.—Urban population maps. J. R. MACKAY, EG, Jan. '53.—New projection for cubic symbols of economic maps. J. R. MACKAY, EG, July '53.—Percentage dot maps. O. M. MILLER, GR, July '53.—New conformal projection for Europe and Asia. A. K. PHILBRICK, A of G, Sept. '53.—Oblique equal area map for world distributions. A. H. ROBINSON, A of G, Sept. '53.—Interrupting a map projection: a partial analysis of its values.

PHYSICAL GEOGRAPHY. H. BAULIG, LER No. 3, '53.—Hauts niveaux de base du Pliocène (France). J. CORBEL, LER No. 3, '53.—Morphologie periglaciaire au Spitzberg. J. CORBEL, LER, '54.—Sols polygonaux et "terrasses marines" au Spitzberg. C. A. COTTON, GJ, Jne. '53.—Tectonic relief: with illustrations from New Zealand. R. FALCK-MUUS, NGT, '53.—Stream and flood current erosion (in Norwegian). J. E. FJELDSTAD, NGT, '53.—Surface waves of finite amplitude. G. GRANQVIST, F, '52-'53.—Harmonic analysis of temperature and salinity in the sea off Finland and changes in salinity. T. HESSELBÜRG, NGT, '53.—Ekman spiral in air and sea. (E). H. JEFFREYS, A of Sc, Sept. '53.—Half a century of geophysics. E. KAARIAINEN, F, '53.—On the recent uplift of the earth's crust in Finland. V. MARMO, T, No. 3, '53.—Laterites. (E). A. NOE-NYGAARD, GTD, '52-'53.—Notes on the nature of some indurated moraines in south Iceland. J. OTNES, NGT, '53.—Run off in unregulated rivers in dry periods. (E). M. PARDE, LER, '54.—Sur la genèse des méandres sur les embarras de la dynamique fluviale. M. PARDE, LER, '53.—Sur le travail latéral des rivières. M. PARDE, RGA, Fasc. 3, '53.—Turbidité des rivières et ses facteurs géographiques. J. PATON, MO, July '53.—Aurora Borealis. F. SAUBERER and I. DIRMHIRN, GA, Hft. 3-4, '52.—Strahlungshaushalt horizontaler Gletscherflächen auf dem hohen Sonnblick. B. A. TATOR, A of G, Mar. '53.—Pediment characteristics and terminology, II.

CLIMATE. J. R. BORCHERT, A of G, Mar. '53.—Regional differences in world atmospheric circulation. C.E.N.F., MO, July '53.—Ocean meteorological networks. S. B. CHATTERJEE, CGR, Mar. '53.—Climo-statistical regions. R. EMSALEM, LER, '54.—Exemples de front tropical en hiver au large de l'Asie orientale. S. EVJEN, NGT, '53.—Frequency of anticyclone centres over north-west and central Europe. (E). J. W. HUTCHINGS, NG, Apr. '53.—Tropical cyclones in the southwest Pacific. D. H. K. LEE, A of G, Jne. '53.—Physiological climatology as a field study. B. RÖDHE, GA, Hft. 3-4, '52.—Air temperature and ice formation in the Baltic.

HUMAN GEOGRAPHY. H. AWAD, BE, '53.—Eaux souterraines et géographie humaine. Vie dans les régions désertiques. J. C. FLUGEL, SR, '52.—Population policies and international tensions. P. GEORGE, LER, No. 3, '53.—Etude de quelques formes de développement urbain. W. M. KOLLMORGEN, EG, July '53.—Settlement control beats flood control. J. M. MAY, GR, July '53.—Mapping of human starvation; diets and diseases.* E. L. ULLMAN, A of G, Mar. '53.—Human geography and area research.

ECONOMIC GEOGRAPHY. LORD BALFOUR, UE, Nov. '52.—Air transport for the British Commonwealth. G. B. CRESSEY, EG, Jan. '53.—Land for 2·4 billion neighbours. S. H. HAUGHTON, SAJ, Dec. '52.—Conservation and the geographer. A. H. KAMPP, GTD, '52-'53.—Agricultural geography and statistics. (E). R. LEROY, RGA, '53.—L'emploi des statistiques forestières dans les monographies. G. E. PEARCY and L. M. ALEXANDER, EG, Jan. '53.—Pattern of air service availability in the eastern hemisphere. P. TOHALL, GSI, '53.—Farm classification in economic geography.

TEACHING. F. R. G. AITKEN, NG, Oct. '53.—Geography in schools: 4. Textbooks: 1924-1953. J. W. COULTER, J of G, Sept. '53.—Importance of

human geography in secondary education to-day. M. DANKLEFSEN, J of G, Sept. '53.—Televising Geography, L. DEAN, J of G, Sept. '53.—Sixth grade travels in lands overseas. J. H. EDWARDS, J. of G, Apr. '53.—How well are intermediate children oriented in space? A. GORRIE, NG, Apr. '53.—Geography in schools: geography and social studies in the Post-Primary School. O. H. LAINE, J of G, May '53.—Who says that geography isn't practical? D. E. LEMLEY, J of G, Sept. '53.—Geography readiness for children ages 5-8. A. MEYER, J. of G, Apr. '53.—College geography and community planning. E. PACE, J of G, Apr. '53.—Construction activity follows a field trip. M. V. PHILLIPS, J of G, Nov. '53.—High school geography club. P. POROCHNIAK, J of G, May '53.—Need for orientation units of High School geography. G. RAE, SGM, Dec. '53.—Teaching of the geography of Scotland. P. SCHLECHTY, J of G, Nov. '53.—Source unit for third grade community geography. A. SCHOU, GTD, '52-'53.—Educational wall-map system of the Danish Geodetic Institute. G. STEVENS and R. BELL, J of G, Nov. '53.—Construction of weather station for the 5th or 6th grades.

POLAR REGIONS. B. FRISTRUP, GTD, '52-'53.—Wind erosion within the Arctic Deserts. O. LIESTOL, NGT, '53.—Glacial variations in the Antarctic. (E). G. de Q. ROBIN, GJ, Jne. '53.—International expedition to Antarctica. J. K. WRIGHT, GR, July '53.—Open Polar Sea.

BRITISH ISLES. W. G. V. BALCHIN, GJ, Dec. '52.—Erosion surfaces of Exmoor and adjacent areas. H. C. BROOKFIELD, TPR, July '52.—Worthing: modern coastal town. H. CARTER, IGJ, Jub. Vol. '52.—Wales: a study in urban geography. K. M. CLAYTON, PGA, Sept. '53.—Glacial chronology of part of the middle Trent basin. J. CORBEL, LER, '52.—Région karstique d'Irlande, le Burren. J. DONNER, T, No. 1, '53.—Quaternary formations in Ireland. (E). G. H. DURY, SGM, Dec. '53.—Glacial breach in the north western Highlands. A. FARRINGTON, GSI, '53.—South Ireland Peneplane. T. F. FINCH, GSI, '53.—Cultivation limits in the Dublin mountains. T. N. GEORGE, A of Sc, Jne. '53.—Lower Carboniferous rocks of north-western Ireland. F. H. W. GREEN, TPR, Jan. '52.—Bus Services as an index to changing urban hinterlands (Somerset). J. P. HAUGHTON, GSI, '53.—Land use in the Carran Polje. D. A. HILL, GSI, '53.—Land use in East Ulster. N. HILTON, GJ, Mar. '53.—Land's End peninsula: influence of history on agriculture. T. A. LLOYD, TPR, Apr. '52.—Welsh Town Planning and Housing Trust, etc. H. LOVEGROVE, GJ, Jne. '53.—Old shore lines near Camber Castle. D. R. MACGREGOR, SGM, Dec. '53.—Daily Travel: time and distance round Edinburgh. A. E. MOODIE, BGB, '53.—Some aspects of British geography. (E). D. PARKINSON, PGA, Dec. '53.—Carboniferous limestone of Treak Cliff, Derbyshire, with notes on the structure of the Castleton Reef-Belt. J. PIMLOTT, A of Sc, Dec. '52.—History of afforestation in Northern Ireland. W. S. PITCHER, PGA, Sept. '53.—Rosses granitic ring-complex, County Donegal, Eire. J. W. REEVES, PGA, Dec. '53.—Wivelsfield sand. C. J. ROBERTSON, TG, Nov. '53.—Scotland, a peripheral economy? A. H. W. ROBINSON, PGA, Jne. '53.—Coastal evolution in Sandwich Bay. H. B. RODGERS, TPR, Oct. '52.—Altrincham—a town of the Manchester Conurbation. J. A. STEERS, GJ, Sept. '53.—East coast floods. J. A. STEERS, GJ, Mar. '53.—Recent papers on the coast of England and Wales. W. SMITH, IGJ, Jub. Vol. '52.—Location of industry in Great Britain. W. SMITH, and others, A of Sc, Mar. '53.—Location of industry in N. Ireland. M. M. SWEETING, GSI, '53.—Enclosed depression of Carron, County Clare. W. H. K. TURNER, SGM, Apr. '53.—Eighteenth-century developments in the textile region of east central Scotland. H. VALENTIN, GJ, Sept. '53.—Present vertical movements of the British Isles. K. C. WIGGANS, SR, '52.—Job and health in a shipyard town (Wallsend). E. C. WILLATTS and G. C. NEWSON, GJ, Dec. '53.—Geographical pattern of population changes in England and Wales, 1921-1951. D. T. WILLIAMS, GJ, Sept. '53.—Distribution of the Welsh language, 1931-1951. H. WILSON, SR, '50.—Housing survey of the dock area in Cardiff. S. W. WOOLDRIDGE, PGA, Sept. '53.—Marginal drainage features of the chalky boulder clay ice-sheet in Hertfordshire.

EUROPE. A. AAGESEN, GTD, '52-'53.—Population of the Danish. Northfrisian Islands. A. C. ALLISON, GJ, Sept. '53.—Lapps: origins and affinities. A. ALLIX, LER, '54.—Sur une géographie de la Bretagne. K. ANTONSEN, GTD, '52-'53.—Textile industry in Hammerum district, Jutland, 1940 (in Danish). P. ARBOS, LER, '53.—Versant piémontais des Alpes Occidentales. G. ARPI, GA, Hft. 1, '53.—Supply with charcoal of the Swedish iron

- industry from 1830-1950. G. BARBIERI, RGI, Jne, Sept. '53.—Il Mugello : Studio di geografia umana. A. BERGDAHL, LS(P), No. 4, '53.—Marginal deposits in south-eastern Sweden. E. BERTHAUD, LER, '53.—Circulation routière aux abords de Lyon. M. BIANCHINI, RGI, Jne, '53.—Valle Anzasca, settlement and economic conditions. (E). K. BLEMSTED, GTD, '52-'53.—Industries of Rönnes, Bornholm (in Danish). S. B. BOCHER, GTD, '52-'53.—Waterpower as location factor in Danish industry. (E). B. BUKUROU, BGB (ES), '48.—La vallée de la Tisa en Yougoslavie. (F). C. F. CAPPELLO, RGI, Sept. '53.—Area of periodic atmospheric instability in the Po Plain. (E). J. CORBEL, LER, '53.—Région karstique de Haute-Laponie : Navnlosfjell. D. DUKIC, BGB (ES), '53.—Sur les conditions de la navigation et circulation sur les cours d'eau de bassin de la Mer Noire en Yougoslavie. (F). G. ERIKSSON, GA, Hft. 1, '53.—Decay of blast-furnaces and iron-works in Väster Bergslagen in Central Sweden, 1860-1940. L. GACHON, RGA, Fasc. 3, '53.—Le paysan et la machine en Livradois. M. GASEVSKI, BGB, '53.—Bassin d'effondrement de Debar. (F). J. GJESSING, NGT, '53.—Ice-scourings and ice-recessions in Oslofjord. (E). T. GRANSTROM, T, No. 3, '53.—Seasonal migration of coast dwellers on Oulu and Tornis. (G). F. H. W. GREEN, EG, Oct. '53.—Community of interest areas in Western Europe—geographical aspects of local passenger traffic. A. A. GRIGORYEV, GJ, Dec. '53.—Reclamation of the forest belt of the U.S.S.R. in Europe. K. HANSEN, GTD, '52-'53.—Sediments and the transport of debris in the Graadby Tidal area (Denmark). I. HELA, F, '52-'53.—Study of land upheaval at the Finnish coast. G. HOLMSEN, NGT, '53.—Lowering of Selbusjoen as a result of regulation (in Norwegian). A. ILLAIRE, RGA, '53.—La vie dans une cellule de haute montagne : Saint-Christophe-en-Oisans. J. IVERSON, GTD, '52-'53.—Zonation of salt marsh vegetation of Skallingen in 1931-34 and in 1952. S. JAATINEN, F, '52-'53.—Regional developments, Aland, 1900-1950 (in Swedish). J. N. JACKSON, SR, '52.—Norwegian colonisation in an Arctic village. B. JACOBSEN, GTD, '52-'53.—Salt marshes of Skalling Peninsula, Jutland. (E). M. LAFERRERE, LER, '53.—Circulation routière dans l'agglomération lyonnaise. M. LAFERRERE, LER, '53.—Remembrement des terres dans le Jura. (Arlay). C. LAGERCRANTZ, F, '52-'53.—Hydrography of Lake Kalpisjärvi. A. LAZIC, BGB(ES), '52.—Regime of the river Drina in Yugoslavia. (E). O. LINDBURG, GA, Hft. 1, '53.—Economic-geographical study of the localization of the Swedish paper industry. M. LUTOVAC, BGB, '53.—La mine et l'agglomération de Bor. (F). L. LUZIO, RGI, Jne, '53.—Lost settlements in Latium. (E). V. MATIC, BGB(ES), '50.—Bassin d'effondrement de Kočane, étude de géographie physique. (F). R. MERLI, RGI, Sept. '53.—Urban geography of Pontedera, Tuscany. D. MILENKO and S. FILIPOVIC, BGB(ES), '51.—Rama region in Bosnia. (E). B. Z. MILOJEVIC, BGB(ES), '48.—Vallées de la Zapana Morava, de la Moraca et de la Treska. (F). S. MONTELIUS, GA, Hft. 1, '53.—Burning of forest land for the cultivation of crops. H. MOSBY, NGT, '53.—Deepwater salinity, Norwegian Sea, (E). H. NELSON, GTD, '52-'53.—Scania. (in Danish). K. NICKUL, F, '52-'53.—Report on Lapp affairs. J. NICOD, RGA, Fasc. 3, '53.—Transports ferroviaires et transports routiers en Provence et dans les Alpes du Sud. S. NORDNES, NGT, '53.—Ice-melt in Saltfjord. (E). O. NORDSTROM, LS(H), No. 8, '53.—Die beziehungen zwischen huttenwerken und ihrem umland in Sudschweden. E. PALOSUO, F, '53.—Severe ice conditions in the central Baltic. J. PELLETIER, LER, '53.—Bordure orientale du Massif Central de Vienne à Tournon, étude morphologique. M. PELLETIER and G. MAZENOT, LER, '53.—Etude de quelques loess du Plateau Lyonnais. J. B. PETROVIC, BGB, '53.—Sources et tourbières dans le bassin d'effondrement de Bela Palanak. (F). G. RAMSLI, NGT, '53.—Snow avalanches and their mapping, in Norway. (E). G. W. S. ROBINSON, GR, Oct. '53.—West Berlin : the geography of an exclave. J. M. ROY, RGA, Fasc. 3, '53.—Tourisme et circulation dans le Dauphiné alpestre. A. SAMAUSEN, NGT, '53.—Ice-melt in Gudbrandsdal and Osterdal (in Norwegian). B. W. SPARKS, PGA, Jne, '53.—Erosion surfaces around Dieppe. M. STRIFFLING, LER (Mem.), 7, '53.—Contribution à l'étude des précipitations atmosphériques dans la région Lyonnaise. T. SUND, NGT, '53.—Glacial geology of the North Bjellavatn district. (E). H. R. THOMPSON, PGA, Dec. '53.—Geology and geomorphology in southern Nordaustlandet, (North-East land), Spitsbergen. S. THORARINSSON, GTD, '52-'53.—Graenavatn and Geststadavatn, Iceland. I. UNDA, NGT, '53.—Ice-melt in Bergen area. L. UNGER, GR, Oct. '53.—Rural Settlement in Campania. S. VUJADINOVIC, BGB(ES), '49.—L'habitat dans le bassin du Pek. (F). G. G. WEIGEND, EG, Oct. '53.—Outlook

for the gas and oil industry of southwest France. W. WERENSKIOLD, GTD, '52-'53.—Strand flat of Spitsbergen.

ASIA. S. R. ABRAHAMSON, EG, July '53.—Petroleum in the Soviet Union: an appraisal of a recent German study. N. AHMAD, GR, July '53.—Indo-Pakistan Boundary Disputes Tribunal, 1949-1950. S. C. BOSE, CGR, Mar. '53.—Natural divisions of the Damodar Valley. D. G. BUNKER, GJ, Dec. '53.—South-west border lands of the Rub'Al Khali. P. S. CASSIDY, UE, Sept. '53.—Growth and development of industry in Hong Kong. G. B. CRESSEY, EG, July '53.—Changing map of the Soviet Union. G. B. CRESSEY, J of G, Sept. '52.—Land of the Five Seas (Middle East). R. C. EVANS, AJ, May '53.—Cho Oyu expedition, 1952. R. C. EVANS, AJ, Nov. '53.—Everest. First ascent of the south peak. J. D. FREEMAN, UE, Sept. '53.—Iban, or sea dayaks of Sarawak. D. W. FRYER, GR, Oct. '53.—"Million City" in south-east Asia. B. N. GANGULY, CGR, Jne. '53.—Land use survey and agriculture planning in Uttar Pradesh. S. D. GUPTA, CGR, Jne. '53.—Physical history of the Damodar Delta. J. HUMLUM, GTD, '52-'53.—Dacca. J. HUNT, AJ, Nov. '53.—Everest. Sir John Hunt's diary. J. HUNT and M. WESTMACOTT, AJ, Nov. '53.—Everest, 1953: Narrative of the expedition. J. HUNT and E. HILLARY, GJ, Dec. '53.—The ascent of Mount Everest. K. M. JENSEN, GTD, '52-'53.—Relation of average and absolute rainfall figures in the Indian desert (in Danish). P. P. KARAN, EG, July '53.—Economic regions of Chota Nagpur, Bihar. B. G. KHER, UE, Sept. '53.—India's place in the Commonwealth. F. KINGDON-WARD, GJ, Jne. '53.—Assam earthquake of 1950. G. W. MURRAY, GJ, Jne. '53.—Land of Sinai. N. PATTANAİK, CGR, Mar. '53.—Study of the weekly market at Barpali. A. ROCH, AJ, May '53.—Swiss Everest Expedition, Spring, 1952. E. SHIPTON, GJ, Jne. '53.—Expedition to Cho Oyu. R. M. P. SINGHA, CGR, Jne. '53.—Mica industry and the rural community in Kodarma area. E. de VAUMAS, BE, '53.—Le Negeb, étude morphologique. E. de VAUMAS, BE, '53.—Répartition de la population au Liban. P. A. WARING and A. C. PARIDA, CGR, Mar. '53.—Second report on the agriculture of the Barpali area. E. WYSS-DUNANT, GJ, Sept. '53.—First Swiss expedition to Mount Everest, 1952.

AFRICA. M. AGIER, LER, '49.—Le Souf. M. I. ATTIA, BE, '53.—Ground water in Egypt. G. BERESFORD-STOOKE, UE, Nov. '53.—Sierra Leone to-day. E. BERLAN, RGA, Fasc. 3, '53.—Le volcan Zouquala et sa région Choa. K. BUCHANAN, GR, Oct. '53.—Northern region of Nigeria: geographical background of its political duality. R. J. H. CHURCH, IGJ, Jub. Vol. '52.—Rice cultivation and irrigation in West Africa. J. DRESCH, LER, No. 3, '53.—Systèmes d'érosion en Afrique du Nord. T. J. D. FAIR, SAJ, Dec. '53.—Agricultural regions and European rural farm population of Natal. H. de FARCY, LER, '50.—Techniques agricoles au Maroc. W. B. FISHER, GJ, Jne. '53.—Problems of modern Libya. W. B. FISHER, I. R. FRASER, and D. W. ROSS, SGM, Apr. '53.—Aberdeen University expedition to Cyrenaica, III. E. E. FOSTER, GR, July '53.—Potential utilization of the Kafue Flats of Northern Rhodesia. J. G. FOSTER, UE, May '53.—Central African Federation. A. M. FROOD, IGJ, Jub. Vol., '52.—Indians in South Africa. K. M. GOODENOUGH, UE, Sept. '53.—Development possibilities in central Africa. M. I. HASSAN, BE, '53.—Physical elements of agricultural land use in the Nile delta. M. B. HEFNY, BE, '53.—Two climatic maps of the Nile Basin and vicinity.* G. M. HOWE, GR, Oct. '53.—Climates of the Rhodesias and Nyasaland according to the Thornthwaite classification. P. P. HOWELL (Ed.), GJ, Mar. '53.—Equatorial Nile project, effects in the Sudan. I. INGE-MANSSON, SGA, '52.—Coffee of Brazil, cacao of Gold Coast. (E). S. P. JACKSON, SAJ, Dec. '53.—Atmospheric circulation over South Africa. M. KASSAS, BE, '53.—Landforms and plant cover in the Egyptian desert. (illus.). G. G. LILL, J of G, May '53.—Villages of the Western and Central Provinces of Liberia, West Africa. W. M. MacMILLAN, UE, May '53.—African growing pains. J. R. MOLARD, LER, '49.—Cratère d'explosion dans le Sahara, Tenoumer. W. B. MORGAN, GJ, Dec. '53.—Lower Shire valley of Nyasaland: a changing system of African agriculture. A. B. MOUNTJOY, IGJ, Jub. Vol. '52.—Problems of industrialisation: an Egyptian example. R. PEATTIE, J of G, Dec. '52.—Culture of ancient Egypt. H. POYNTON, UE, Sept. '53.—Industrial and general economic development in Kenya, Uganda and Tanganyika. J. C. PUGH and L. KING, SAJ, Dec. '53.—Outline of the geomorphology of Nigeria. O. REBIERO, IGJ, Jub. Vol., '52.—Agriculture in West Africa. J.

ROBERTSON, UE, Nov. '53.—Sudan in transition. R. W. STEEL, IGJ, Jub. Vol. '52.—Sierra Leone : transformation of a colony. K. SUTER, RGA, Fasc. 3, '53.—Population et l'habitat au Touat. B. E. THOMAS, EG, Oct. '53.—Motoring in the Sahara : the French raids of 1951–1953. J. TILNEY, UE, Sept. '53.—Problems and potentialities in the West African territories. E. J. WAYLAND, GJ, Mar. '53.—More about the Kalahari. J. H. WELLINGTON, SAJ, Dec. '53.—Niger and Okovango : physical and human factors in their development.

NORTH AMERICA. L. M. ALEXANDER, EG, Oct. '53.—Impact of tourism on the economy of Cape Cod, Massachusetts. A. G. BALLERT, EG, Jan. '53.—Great Lakes coal trade : present and future. J. E. BRUSH, GR, July '53.—Hierarchy of central places in southwestern Wisconsin. L. CHEVRIER, GJ, Dec. '53.—St. Lawrence seaway and power project. L. DURAND, Jr., A of G, Dec. '52.—Migration of cheese manufacture in the United States. D. R. DYER, A of G, Dec. '52.—Place of origin of Florida's population. J. D. GARWOOD, EG, Jan. '53.—Postwar industrial migration to Utah and Colorado. H. F. GREGOR, EG, Oct. '53.—Agricultural shifts in the Ventura Lowland of California. J. McCARTER and F. KNIFFEN, EG, Oct. '53.—Louisiana iron rocks. W. E. McINTYRE, J of G, Nov. '53.—Palo Duro canyon. E. T. PRICE, A of G, Jne. '53.—Geographic analysis of White-Negro-Indian racial mixtures in eastern United states. E. B. SHAW, BE, '53.—Water problems in the United States. B. SVENSON, SGA, '52.—Evolution in American Cotton Belt. (E). R. C. WEST, EG, Oct. '52.—Folk mining in Columbia.

LATIN AMERICA. R. A. ATKIN, J of G, Sept. '53.—Batabano—Cuba's chief fishing port. J. P. AUGELLI, EG, Oct. '53.—Patterns and problems of land tenure in the Lesser Antilles : Antigua, B.W.I. J. P. AUGELLI, EG, Jan. '53.—Sugar cane and tobacco : agricultural types in the highlands of Puerto Rico. L. M. C. BERNARDES, RBG, Jan. '52.—Climate of Rio de Janeiro. (E). E. de CARVALHO, RBG, Oct., Dec. '51.—Wheat in Brazil. (E). L. N. DAMBAUGH, J of G, Feb. '53.—Jamaica : island in transition. A. H. DOERR, J of G, Nov. '53.—Salt industry of southwestern Puerto Rico. A. J. P. DOMINGUES, RBG, Jan. '52.—Geomorphology of Paulo Afonso. (Brazil). (E).* W. A. EGLER, RBG, Oct. '51.—Caatinga in Pernambuco. (E). R. H. FITZGIBBON, EG, July '53.—Uruguay's agricultural problems. D. C. GAJDUSEK, GR, Jan. '53.—Sierra Tarahumara. P. GRIFFIN, J of G, Apr. '53.—Allusions to corn in Mexican toponomy. A. T. GUERRA, RBG, Jan. '52.—Geology of the territory of Amapá (Brazil). (E). I. A. L. T. GUERRA, RBG, Jan. '52.—Cacao in Bahia. (E).* B. HOWELL, TPR, Oct. '52.—Planning in Puerto Rico. I. INGEMANSSON, SGA, '52.—Coffee of Brazil, cacao of Gold Coast. (E). P. E. JAMES, A of G, Jne. '52.—Patterns of land use in northeast Brazil. P. E. JAMES, GR, July '53.—Trends in Brazilian agricultural development. E. KUHLMANN, RBG, Apr. '52.—Prairie and forest vegetation in southern Brazil. (E). L. LLIBOUTRY, RGA, '53.—Région du Fitz-Roy (Andes de Patagonie). M. PAVAGEAU, RBG, Apr. '52.—Comparative study of soils of the *Planalto*, Central Brazil. (E). J. SETZER, RBG, Oct. '51.—Soils in the State of Itapeperica, Brazil. (E). A. TAMMEKANN, T, No. 2, '53.—Tectonics of the continent of South America.

AUSTRALASIA. F. H. BISHOP, NG, Oct. '53.—Air services in New Zealand. C. W. BONYTHORN and B. MASON, GJ, Sept. '53.—Filling and drying of Lake Eyre. A. J. BROWN, TPR, July '52.—Plan of Canberra, Federal capital of Australia. H. J. CRITCHFIELD, NG, Apr. '53.—New Zealand in American eyes : a review. K. B. CUMBERLAND, SGM, Dec. '53.—Population growth in New Zealand. R. S. DICK, NG, Apr. '53.—New classification and map of New Zealand vegetation.* M. KIBBLEWHITE, NG, Apr. '53.—Otago in 1871 : life and landscape. NG, Apr. '53.—Rarotonga : Pacific Outpost. (photo. illus.). NSW, No. 10, '52.—Current conditions, Australia. (wool, cotton, dairy statistics). L. L. POWNALL, NG, Apr. '53.—Town and region : a comparison of Palmerston North, Wanganui and New Plymouth. LORD RENNELL, GJ, Sept. '53.—Kimberley division of Western Australia. K. W. ROBINSON, NG, Oct. '53.—Population and land use in the Sydney district : 1788–1820. D. F. THOMSON, GJ, Mar. '53.—War-time exploration in Dutch New Guinea. A. D. TWEEDIE, NG, Oct. '53.—Sugar cane in Queensland.

OCEANS E. W. ALLEN, GR, Oct. '53.—Fishery geography of the north Pacific Ocean. H. ISNARD, RGA, '53.—La Réunion : problèmes démographiques, économiques et sociaux. W. B. JOHNSTON, EG, Jan. '53.—Pacific Island agriculture : Western Samoa. H. KUBLIN, A of G, Mar. '53.—The discovery of the Bonin Islands : a re-examination.

HOW DO YOU TEACH MAP-READING?

A NEW visual unit, "USING THE ONE-INCH MAP," is now available for use in the classroom. Designed to show a three-dimensional picture of a heavily contoured area on a map—and the interpretation of map symbols through the constant activities of the class, the unit comprises:

1. 20 Ordnance Survey Maps (Sheet 182) for pupils' use. The study area is marked and described on attached leaflets.
2. A two-reel sound film, showing students following the actual route.
3. A filmstrip (46 frames) dealing with relevant topography, geological structure and land utilisation.
4. A booklet for teachers, suggesting methods of using the unit.

The complete unit, which, it is stressed, provides active participation in the lesson by pupils, may be purchased by L.E.A. film libraries, and a limited number of sets are available for hire.

FREE! A completely revised third edition of the illustrated catalogue FILMS FOR THE CLASSROOM is now ready. It gives full details of USING THE ONE-INCH MAP and other films for teachers of Geography, History, Modern Languages, etc. Write to Department G.

Another New Geography Release is **GOLD MINING IN AUSTRALIA**.

Hire Rates

for "Using the One-Inch Map" visual unit—with film in colour, 26/- first day, and 10/- each subsequent day, or with film in black and white, 16/- first day, 5/- each subsequent day (plus postage). For convenience of users, the filmstrip may be purchased separately for 15/-, and the teachers' booklet for 1/6, post free.

GATEWAY *Film Productions*

Limited

470 GREEN LANES, ALMERS GREEN, LONDON, N.13

**SCHOFIELD
AND
SIMS**

"This is a fine series"—*The Middlesex Log*

PLEASANT PATHS TO GEOGRAPHY

For pupils of 7-11 years

H. M. SPINK, M.C., M.A., B.Sc., F.R.G.S. and R. P. BRADY, M.A., B.Sc. Sometime Lecturer in Geography

The plan of the series lays strong emphasis on the child's own environment and, keeping this in mind as a yardstick, leads the child to wider views of the features under discussion.

"..... an extremely well-planned, valuable and attractive series which can be strongly recommended."—*The School Library Review*.

Book I—The World We Live in: An introduction through activities and experience of the local environment, to the idea of location, space and relative size, relations of land and sea masses, land features, vegetation, weather and seasons. "..... at the same time there is due balance between the local study and the geography of the United Kingdom and the world beyond."—*Times Educational Supplement*. 4s. 6d. full boards.

Book II—All People Our Neighbours: "A book which takes children on a series of captivating visits to other lands. No lower Junior could remain uninterested in the vivid stories and innumerable pictures in this well-printed reader."—*Ulster Education*. 5s. 0d. full boards.

Book III—Working to Live—At Home: "The theme of this book is work—the necessary work of Britain. The sailor, the farmer, the miner the textile worker, the engine and lorry-drivers and even the bank manager.... the importance of the work they do is clearly brought out for nine-year-olds."—*The Teachers' World*. 5s. 0d. full boards.

Book IV—Working to Live—Abroad: "Children voyage on a tramp ship to see the world's main regions. On successive voyages of description they deal in turn with the hot, warm and cool lands, their people and their products. Simply, yet attractively written, well illustrated and with an abundance of telling maps, this book should prove admirably suited to the upper classes of the Primary School, and for some lower forms in the Secondary Modern."—*The Schoolmaster*. 5s. 0d. full boards.

Teachers' Books, giving suggestions for directing further activities corresponding to the above, I-IV, each 4s. 0d.

SCHOFIELD & SIMS, LTD. HUDDERSFIELD

HONG KONG

BY
HAROLD INGRAMS

The first volume in a new series, to be published under the collective title of *Corona Library*, aimed at providing popular, but authoritative accounts of British dependencies. The author covers all aspects of the social and economic affairs of the Colony, the work and characteristics of its people, and shows how Western influence has affected their lives and habits. Fully illustrated with 40 plates and 10 maps.

Price 27s. 6d. By post 28s. 2d.

H.M. STATIONERY OFFICE
P.O. Box 569, London, S.E.1, and Sale
Offices in London, Edinburgh, Manchester, Birmingham, Cardiff, Bristol and Belfast or through any bookseller.

The geographer's role in physical planning is vital but neglected.

THE TOWN PLANNING REVIEW

the quarterly journal of international standing, explores this aspect as part of the essential unity of planning. The subscription is £1 or \$4 per volume and a specimen copy will be sent on request from :—

THE UNIVERSITY
PRESS OF LIVERPOOL
LIVERPOOL 3.

60 COPIES PER
MINUTE



NO
PREPARATION

Ready for
immediate use.

NEW ADDITIONS

- | | |
|-----------------------------------|--|
| M.146. West Riding of Yorkshire | M.159. Southampton Water and Isle of Wight |
| M.147. Tees-side | M.160. Plymouth Sound |
| M.148. The Potteries | M.161. Sunderland |
| M.150. Sarawak | M.162. S. Rhodesia |
| M.151. Cumberland and Westmorland | M.164. Dorset |
| M.152. Suffolk | M.165. Fife, Kinross, Clackmannan |
| M.153. Derbyshire | M.166. North Riding of Yorkshire |
| M.154. Nottinghamshire | M.168. Jamaica |
| M.155. Nigeria | M.169. Rhodesia and Nyasaland |
| M.157. East Riding of Yorkshire | M.170. Cardigan and Radnor |
| M.158. Isle of Man | M.171. Peru |
| A.21. South Africa (Major) | |

THE MAPOGRAPH CO. LTD.
440, HIGH ROAD, CHISWICK, LONDON, W.4.

Telephone : CHIswick 5635

Established 1923

DENT

JUST PUBLISHED

ASIA

AND EUROPEAN RUSSIA

By THOMAS PICKLES, B.Sc.

With four pages of photographs and
71 Maps and Diagrams

Cloth Boards

240 Pages

4s. 9d.

Intended primarily for use by pupils in the middle and upper forms of Grammar Schools who are following a course leading to the General Certificate of Education. Mr. Pickles has deliberately kept the book within small compass, endeavouring by careful selection of subject-matter and the varied method of treatment to reduce the complexities of the continent to manageable proportions.

WESTERN EUROPE

By S. J. B. WHYBROW, B.Sc.

Stiff Paper Cover

48 Pages Quarto

2s. 0d.

The method of this book, maps and diagrams with letter-press opposite is one that the author has used for many years : it is not an experiment. Whenever possible facts have been given in map or diagram form, because students learn more easily by this method. The aim throughout the book has been to make the letterpress as concise as possible and it should not be necessary for the student or, as is more commonly the case, the teacher, to have to make notes.

INTRODUCING GEOGRAPHY

By J. K. DALE, M.A.

Stiff Paper Cover

48 Pages, Quarto

2s. 0d.

BEDFORD STREET. LONDON. W.C.2

Costumes of Europe in Wool

The Department of Education of the International Wool Secretariat announces a new set of twelve wall sheets of exceptional distinction and value. Specially painted by two well-known artists, Edward Mortelmans and Dawson Thomson, the pictures illustrate costumes of twelve European countries, shown against a characteristic background in each case.

The pictures are in full colour and of great artistic merit. Each is accompanied by a concise teaching note, in which details of the costumes are supplemented by information concerning their origin and the circumstances in which they are worn to-day.

** Price 7/6 the set of twelve, post free, from*

THE DIRECTOR OF EDUCATION
INTERNATIONAL WOOL SECRETARIAT
DORLAND HOUSE, 18/20, REGENT STREET
LONDON, W.1

GEOGRAPHICAL ASSOCIATION, 1954

President : Professor S. W. WOOLDRIDGE, C.B.E., D.Sc.
Past-President : Dr. O. J. R. HOWARTH ; *Vice-Presidents* : Professor H. J. FLEURE,
Professor J. F. UNSTEAD, Mr. T. C. WARRINGTON.
Trustees : Professor Sir J. L. MYRES, Mr. L. BROOKS.
Hon. Treasurer : Sir WILLIAM N. HIMBURY.
Hon. Auditor and Librarian : Mr. T. C. WARRINGTON.
Hon. Secretary : Dr. ALICE GARNETT.
Hon. Editor : Professor D. L. LINTON.
Hon. Annual Conference Organiser : Dr. W. G. V. BALCHIN.
Council : Officers (listed above) ; Chairmen of Committees (see below) ; Branch Representatives [see Standing Order 1 (1)] and the following elected members : Misses A. A. ALFORD, W. M. BRITTON, Professors H. C. DARBY, A. DAVIES, R. H. KINVIG, Messrs. J. E. ALLISON, S. G. COOKE, W. R. A. ELLIS, B. HARTOP, C. H. SAXELBY, W. H. SHEPHERD, J. G. SKINNER.
Executive Committee : Professor S. W. WOOLDRIDGE, Professor H. J. FLEURE, Mr. L. BROOKS, Sir J. L. MYRES, Sir W. N. HIMBURY, Dr. ALICE GARNETT, Professor D. L. LINTON, Dr. W. G. V. BALCHIN, Mr. T. C. WARRINGTON, Dr. E. W. H. BRIAULT ; *Section Representatives* : Dr. G. M. HICKMAN, Messrs. G. H. BURDEN, R. COLE, R. C. HONEYBONE, J. A. MORRIS, A. E. SMAILES, H. H. STARR ; *Members elected by Council* : Professor H. C. DARBY, Messrs. J. E. ALLISON, S. G. COOKE, W. R. A. ELLIS
Maps Officer : Mr. N. K. HORROCKS.
Editorial Panel : Professor D. L. LINTON, Dr. E. W. H. BRIAULT, Mr. N. PYE, Dr. M. J. WISE, Miss M. OUGHTON.

SECTIONS AND STANDING COMMITTEES OF THE ASSOCIATION PRIMARY SCHOOLS SECTION COMMITTEE

Chairman : Mr. G. H. BURDEN.
Secretary : Mr. A. F. SPRANGE, 12, Rose Avenue, South Woodford, London, E.18.
Committee : Miss S. HAYWOOD, Mr. S. R. PAYNE.

PUBLIC AND PREPARATORY SCHOOLS SECTION COMMITTEE

Chairman : Professor J. A. STEERS.
Secretary : Mr. H. H. F. SIRR, Monkton Combe School, Bath.
Committee : Misses M. A. ARBER, M. M. FOWLER, M. L. TYRRELL, Professor H. C. DARBY, Messrs. R. F. B. CAMPBELL, W. A. COOPER, P. HAYES-FISHER, W. V. LEWIS, H. D. R. P. LINDSAY, P. T. MARSDEN, J. M. MCSWINEY, J. P. NELSON (I.A.P.S. Rep.), G. W. NEWBERRY, H. H. STARR, R. W. STEEL, W. R. TAYLOR (Editor of *Geogr. Notes and Queries*), J. W. THOMPSON (Treasurer), R. D. YOUNG.

SECONDARY SCHOOLS SECTION COMMITTEE

Chairman : Mr. J. A. MORRIS (G).
Secretary : Mr. R. COLE (G), 31, Barholm Road, Sheffield, 10.
Committee : Miss E. A. BROWN (G), Mrs. D. R. MARTIN (M), Messrs. H. J. EVANS (G), A. J. GARRETT (M), G. A. GERMAN (G), J. B. GOODSON (M), P. R. HEATON (M), N. K. HORROCKS (G), J. V. HORWOOD (G), W. HOY (M), L. J. JAY (G), H. J. LOWE (M), J. MCBRIDE (G), J. A. MCIVER (G), E. F. MILLS (M), M. MURPHY (M), A. D. NICHOLLS (G), J. C. PARRACK (G), G. H. SKINNER (M), H. H. STARR (G), L. S. SUGGATE (G), C. B. THURSTON (G).
(G).—Grammar School ; (M).—Modern School.

SECTION FOR FURTHER EDUCATION IN GEOGRAPHY

Chairman : Mr. W. WALLACE.
Secretary : Mr. G. LIGHTON, Walford, Park Avenue, Ashton, Preston, Lancs.
Committee : Mrs. E. H. EVANS, Dr. M. L. MOORE, Messrs. M. A. BLOOMFIELD, A. H. FRY, E. GLEDHILL, H. REES, H. T. ROBINSON.

TRAINING COLLEGES SECTION COMMITTEE

Chairman : Dr. GLADYS M. HICKMAN.
Vice-Chairman : Mr. R. C. HONEYBONE.
Secretary : Miss M. GOSS, Stockwell College, Bromley, Kent.
Committee : Misses R. F. CARR, M. MCCRIRICK, M. THOMPSON, I. V. YOUNG, Messrs. E. P. BOON, F. S. B. CONE, E. B. DOBSON, D. A. HILL, H. L. WIDDUP.

STANDING COMMITTEE FOR VISUAL AIDS IN THE TEACHING OF GEOGRAPHY

Chairman : Mr. R. C. HONEYBONE.
Secretary : Mr. D. A. E. TAYLOUR, 39, Lynton Road, New Malden, Surrey.
Committee : Misses P. JEFFERY, M. SIMPSON, Mrs. M. LONG, Messrs. A. ARKINSTALL, T. BROWN, G. CAMPBELL, G. J. CONS, P. R. HEATON, E. F. MILLS, J. C. PARRACK, F. A. RING.

STANDING COMMITTEE FOR URBAN SPHERES OF INFLUENCE

Chairman : Mr. A. E. SMAILES.
Committee : Dr. H. E. BRACEY, Mr. G. E. HUTCHINGS.

THE WORLD FAMOUS WESTERMANN WALL MAPS

are now obtainable in Great Britain

Below is a reproduction of the first of a series of English lettered Wall Maps
which is NOW READY

EUROPE

Westermann-Maps



SIZE: 84" x 72"

SCALE 1:3,000,000

PRICE £7.10.0

The whole range of Westermann's Wall Maps with
German place names is also available together
with the new Westermann Pictorial Wall Map series.

for details and prices write to

THE GRANT EDUCATIONAL COMPANY LTD
LONDON: 12 CURSITOR ST., E.C.4. GLASGOW: 91/93 UNION ST., C.1